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**PRIMAE LINEAE
SYSTEMATIS NATURAE.**

Auctore

PAULO HORANINOW.



Petropoli,

1834.

Manuscript of the Author

#

PRIMAE LINEAE

SYSTEMATIS NATURÆ,

*NEXUI NATURALI OMNIUM EVOLUTIONI-
QUE PROGRESSIVAE PER NIXUS REAS-
CENDENTES SUPERSTRUCTI,*

AUCTORE

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Medicinae Doctore, IMPERATORIAE Medico-Chirurg. Academiae
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et Medicorum Vilnensis, Petropolitanar. Medicorum Ruthe-
norum ac Pharmaceuticae, atque Medico - chirurgicae Berolinen-
sis Sodali, a Consiliis Aulicis et Ord. S-tae Annae 3 Class.
Equite.

PETROPOLI.

TYPIS KAROLI KRAJANIS

1834.

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С. Петербургъ, 22 Марта 1854 года.

Ценсоръ Ф. Шармъ.

Docuisti me DEUS a juventute mea,
et usque nunc pronuntiabo Mirabi-
lia Tua.

2/15/8

CELSISSIMO ILLUSTRISSIMO^{QUE}

C O M I T I

ALEXANDRO GREGORIDAE

A STROGONOW,

**RERUM INTERNARUM ADMINISTRI SOCIO,
VARIOR. ORDIN. EQUITI ETC.**

SCIENTIARUM NATURALIUM CULTORI ET

FAUTORI EXIMIO

S A C R U M.

Nec pietas adversus DEUM, nec quanta huic gratia debeatur, sine explicatione Naturae intelligi potest; Homo enim ortus est ad contemplandum DEUM et Naturae contemplatio est ad DEI admirationem proxima et apertissima via.

CICERO.

Чѣмъ успѣшнѣе обрабатывались Науки, тѣмъ легче, тѣмъ многочисленнѣе становились признаки и, можемъ прибавить, доказательства бытія Всемогущаго Разума, создавшаго всячес-
кал. *Библиотека для чтенія*, 1854. 111. стр. 187.

LECTORI BENEVOLO.

Quum prima Zoologiae elementa in Scholis publicis, annos vix tredecim natus, conciperem, amore hujus Scientiae captus, notiones animalium et avium indigenarum praecipue collegi; Pharmaciae tandem accumbens, Chemiam mihi familiarem reddere cuavi, ac mox Mineralia et Plantas inspexi.

Hisce Scientiis imbutus Medicinae studium ini-
vi, facileque cognovi, Physiographiae hodiernae
principia Anatomiae, Physiologiae, Pathologiae et
Pharmacologiae desideratis commode mederi posse.
Absoluto cursu litterarum, praxi medicae operam
dedi, munere tandem Botanices Professoris Aca-
demici spatio novem annorum, et quod excurrit, fun-
gens, horas vacantes plantis examinandis dicavi, nec
non Anatomiae comparativae, Zoologiae et Minera-
logiae studio, quae mihi quoque publice Academiae
Medico-Chirurgicae alumniis praecipienda commissa
fuere.

Jam vero cursum Physiographiae universae spa-

tio anni Academici absoluturus, ac de Systemate universi, meis praelectionibus adaequato et conformi, sollicitus, optimos Auctores de variis objectis consului — et quae Chemiam, Physiographiae applicandam, spectant, **BERZELIO, DOEBEREINER, ORFILAE, GIESE, HESSE**, aliisque excerpti; Systemata mineralogica: **WERNERI, HAYU, PHILLIPSII, MOHSII, BEUDANTI, BERZELIUS, LEONHARDI ET NAUMANNI** comparavi; Opera phytologica: **LINNAEI, JUSSIEUI, ST. HILAIRI, MIRBELII, DECANDOLLII, ROBERTI BROWNII, LINDLEYI, SPRENGELII, REICHENBACHII, BARTLINGII ET SHULTZII**, ne alios commemorem, avida manu versavi; in Zoologiae studio, praeter varias Monographias, Opera **LAMARKII, LATREILLII, CUVIERI, BLAINVILLEI, TIEDEMANNI, RUDOLPHII, CARUSII, EICHWALDI ET WIEGMANNI** me adjuvare, neque ea neglexi, quae audax **OKENI** genius Physiographiae universae suppeditavit. Seriem Nominum Clarissimorum ideo hic adduxi, ut sua cuique reddantur, nec nimis citatis libellus oneretur. Practicas vero notiones corporum naturalium, praeter propriam, haud exiguum supellectilem, offertis eximiis **GEBLERI, WOLFGANGII, TSCHERNIAEW, Gorski et KAEMERERI** auctam, confirmarunt praeprimis: Museum ditissimum IMPERATORIAE Academiae Scientiarum, cui liberum aditum amicissimi **TRINIUS, BRANDT ET POSTELS** conciliavere; Collectiones summe instructivae IMPERATORIAE Medico - Chir. Academiae Vlnensis, quam visitandam **JUSSU SUPREMO** missus fueram, nec non Museum pretiosissimum Instituti Montani, Hortus Bo-

tanicus Petropolitanus, Herbarium ditissimum humanissimi **PRESCOTT** et Mineralia elegantissima **KAE-MERERI**, quibus nunc Universitas Casanensis potita est.

Multa adhuc insunt libello, quae mihi ipsi vel potentioribus in posterum corrigenda reliqui; quibus uniformitas in exponendis objectis et classificatione deficere videbitur, ii mihi, tantae molis opus concinnanti et temeras innovationes fugienti, veniam dabunt; quandoquidem omnia, quae licuit, examinans vidi, divisiones et subdivisiones quaternarias (ut jam *Tetractys vitae* Clariss. **KAYDANOW** monet), vix non ubique in Natura prosequi posse; attentionem itaque Auctorum ad divisionem quadrimembrem vertat libellus.

Mineralibus nonnisi ea adscripsi, quae memoriam facile fugiunt, et Animalium solos characteres generales exposui, Mineralogiae et Zoologiae compendia Rossico idiomate, mox, si Omnipotenti placeat, editurus; characteres vero ordinum et familiarum Plantarum concinnavi, ut et ratio coordinationis nostrae expertis, et quaedam notio objectorum tyronibus in succinctis pateat. Qui fusiozem adumbrationem mineralium, plantarum et animalium generumque enumerationem completam desiderarent, illos ad **NAUMANNI** et **BEUDANTI** Mineralogias, **BARTLINGII** Ordines naturales plantarum ac **SCHULTZII** systema, **CUVIERI** et **WIEGMANNI** Zoologias remitto, quum istos duces praeprimis secutus sim. De psychica dignitate Hominis Psychologi et Theologi con-

sulendi, si quidem Anthropologia materialis cum spiritali nostris temporibus, more antiquorum Philosophorum, jungi posset. Non enim vanâ gloriâ sed Scientiæ perfectioris desiderio incitati, nec contaminando judicia aliorum, sed rerum foedera inquirendo, Synopsin Naturalium concinnare studuimus, ut facilius perspiciantur, quæ habemus, quæ arguenda aut reformanda sunt ad integram et conformem Physiographiam exponendam.

Vade ergo libellus, utut incomptus, teque offer Viris, qui, vero Scientiæ amore flagrantés mihiq̃ue indulgentes, lacunas adimplere ac valorem tui rite perpendere valeant, — et quæ mihi non licuit, perficiant Magistri.

Dabam Petropoli Cal. Jul. 1834 Anno.

Auctor.



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PRÆMITTENDA.

Natura est actus et modus nascendi et complexus rerum, quæ nascuntur (**Reichenbach**). Progreditur illa a simplicibus ad composita, ab infimis ad superiora, à coalitis et hebetatis ad libera et absoluta — et quidem repetitis vicibus.

Duplex generalis differentia corporum naturalium observatur: a) Corpora *anorganica*, e moleculis simplicissimis seu solidis constantia, (et *amorpha*): *gasiformia*, *liquida*, *solida-bruta et crystallisata*, vivunt modo in conceptione; b) in *organicis* (cellulosis) vero: *plantis*, *phytozois*, *animalibus* ac *homine*, vitæ superiores gradus manifestantur. Patet hinc, omnia Naturæ producta vitâ gaudere, utpote in vario gradu; fallax interim esset opinio eorum, qui crederent, Naturam pari passu per illos gradus ad summam perfectitudinem tendere, dum omnia ejus producta sibi quidem perfectissima sint; sic, vitâ *conceptionis* perfectissimâ pollens, *Crystallus* volumine ut plurimum, regularitate mathematica ac longaevitate facile omnes embryones organicos excellit; *Plantæ* vitâ *reproductivâ* perfectissima præ coeteris organicis eminent; in *Animalibus* vitæ *conceptivæ* et *vegetativæ irritativa* perfectissima (inde robur eorum et locomotivitas) adsociatur, dum in *Homine* illæ tres species vitæ subordinantur perfectissimæ *intellectuali*; vivit enim ille in conceptione, velut cry-

stallus, in vegetativo suo systemate adinstar plantæ, movetur irritativo, velut animal, ratione perfecta ab omnibus distinctus, ni, hac Divina qualitate neglecta vel abutens, turpissimus et ferocissimus evadat.

Nec tamen tales differentiæ strictos limites agnoscunt, quandoquidem crystalli nonnullæ crescere videntur, sic arbor Dianæ (argenti) pedetentim increscit, adinstar lichonum, vegetabilia quædam irritabilitate gaudent, animalia facultates inferiores mentis rationalis, (imaginationem, memoriam, intellectum) sibi vindicant. Sequitur inde, differentiam, absolute oppositam, inter corpora naturalia haud existere, dum omnia nonnisi series quasi radiantes corporum, communi vita animatorum, quoad gradus variante, sistant.

AQUA, substantia summe indifferens, est elementum materiale-universale seu mater omnium (ut jam Veteres dixere), discedit autem illa in duo sibi invicem polariter opposita elementa: *Oxygenium*, absolute negativum, et *Hydrium* (Hydrogenium), absolute positivum; hisce interpolantur duo alia elementa, *arboneum* nempe (aqua oxygenoidea) et *Azotum* seu *Nitrium* (aqua desoxydulata). Hæc principalia 4 elementa varia ratione conferunt ad omnia, quæ in Planeta nostro exstant, (quantum hucusque innuit) progeneranda — una cum aliis sic dictis chemicis elementis, quorum omnium partes constitutivas remotissimas in oxygenio et hydrio pono, ita quidem, ut Phthorum, Chlorum, Bromium, Jodum ac Selenium, corpora Chémico haud decomponenda, regionem oxygeneam spec-

tent; Sulphur, Phosphorus, Silicium et Borium vero regionem hydrii occupent. (Videsis Schema, libello annexum). Metalla eo differunt, meâ quidem sententia, a substantiis organicis oxydabilibus, quod in iis principalia elementa: hydrio-azotum et oxy-carboneum, arctissime juncta sint — sigilloque Naturæ munita, quod Chemicus divellere nequeat. *Metalloida* defectu oxygenii et vix carboneo presente, oxygenio maxime opposita fiunt, ammoniâ ob absentiam carbonei vix desoxydanda, hæc regioni nitrio-hydriicæ adscribimus, e contra metalla *nobilia*, ægre oxydanda, regioni oxycarbonicæ; metalla *fixa ignobilia* regioni hydrio-carbonicæ-(terreæ,) *volatilia* vero oxynitricæ (aëreæ) pertinere videntur. Elementa talia chemica raro in Natura libera obveniunt (Azotum, adjuncto Oxygenio, athmosphæram ex aqua orientem et in illam Naturæ autocratia facile abituram — vita-serena et mors-pluvialis athmosphæræ — sistit; metalla quædam nobiliora), sed arte chemica e metallis metalloïdisque oxydatis, phthoratis, chloratis, jodatis v. sulphuratis, hisque ultimis oxydatis vel hydratis eliciuntur vel simpliciiori ustione divelluntur e substantiis organicis et quibusdam anorganicis.

Si ergo mecum admittere velles, *Aquam* menstruum commune universi Planetæ esse, facile affinitatem omnium, ex una fonte oriundorum, cognovisses, cum a simplicissimo, solidissimo gravissimoque metallo (platino) ad perfectissimum, summe compositum et diffusibillimum (mente sidera et Deum petentem) hominem dantur corpora, sibi quidem perfecta et absoluta, quibus nexus seu

series naturalis omnium confirmatur. Ita elementa ametallica gasiformia cum solidis jungit *Bromium*, (varia temperaturâ vaporosum, fluidum vel solidescens), ista solida cum metallicis *Jodum et Selenium*, inter metalloïda alcaligena et lithalcaligena *Lithium* intercedit, inter hæc et terrigena *Magnium*; inter metalloïda generatim et metalla ambigunt *Yttrium, Thorium, Cerium*, ut ægre limites statuunt Chemicî.

Quæ Mineralogiam spectant corpora (exclusis Pneumologiæ, Hydrologiæ, Geognosiæ et Petromatognosiæ objectis) in 4 naturales classes distribuuntur: *Metallita* nempe, *Silicida* ac *Halita metalloïdea* et *Pyroita ametallica*. Inter primas duas classes dantur *Silicida amphotera* s. metallo-metalloïdea, inter secundam et tertiam *Silicida hydrata crystallisata* (Zeolithi) et *Halita lapidea* (Phthoretum calcii, Sulphates barytae, calciae etc.; hæc cum Halitis s. salibus solubilibus nectit *Gypsum*, majori aquae copia solvendum. Pyroita Regnis anorganico et organico interposita, altera parte crystallisabili (Sulphur, Adamas, Graphites) genuina fossilia sunt, altera parte deformium, facile decomponendorum (Lithanthrax, Asphaltum, Succinum), Regno vegetabili accumbunt, quum vix discrimen Succinum minerale inter et Copal vegetabile datur, si origo illorum ignota esset.

Adinstar mineralium, e cortice plantarum, quasi solo peculiari, exsurgunt Hypoxyla, superaddito thallo plus minusve foliaceo, in Lichenes et Hepaticas lichenoides ac bryoïdeas sese evolventia, ultimis *Andracea* transitum

parat ad Muscos, in Lycopodiaceas et Equisetaceas transfigurandos ac summam sui generis evolutionem in Filicibus et Rhizospermis perficientes, ut tandem in Coniferis et Cycadeis arborescant cyclumque Classis peculiaris *Sporophorarum* (*) absolvant; ultimis sporæ conglutinantur ad embryonem producendum, ipsis innatum (Synorhizae Richardi).

Novum circulum plantarum *Coccophorarum* (perigonio simplici ut plurimum præditarum, ni deficiat vel in corollam et calycem plus minusve distinctum solvatur) inchoant Najadeae, Ruppiaceae, in Gramineas, Junceas et Palmas transeuntes; tandem Orchideae, Cannaceae, Irideae et Liliaceae sequuntur; Pandaneae vero, Aroideae, Piperaceae, Hydrocharideae et Nymphaeaceae jam varias qualitates *Spermophorarum* sibi vindicant et cyclum ordinis peculiaris absolvunt.

Embryo dicotyledoneus, ut plurimum perfectis seminibus proprius, tertium denotat circulum orbis vegetabilium, *Spermophorarum* nomine salutandum, ac secundum perigonium simplex vel duplicis corollam synpetalam et polypetalam in tres sectiones dividendum: Monochlamydearum, Synpetalarum et Polypetalarum. In quaque sectione: *Hys-*

(*) Sub nomine *Sporophorarum* conjungo Acotyledoneas et Synorhizas Auctorum, forsân disjungendas; *Coccophorae* et *Spermophorae* sunt fere eadem ac Mono — et Dicotyledoneae. Termini tales, fusius definiendi, mihi magis ad naturales differentias plantarum exponendas et lites Eruditorum tollendas quadrare videntur.

teranthae, s. Epigynae quibus pars inferior perigonii (calycis et corollae) nec non stamina cum ovario conferruminantur, evolutionem in *minimo*; — *Calycanthae* seu Perigynae, ovario plus minusve libero, staminibus ac petalis passim cum calyce concretis, evolutionem in *medio* haerentem sistunt; evolutionem vero in *maximo* omnes verticilli florales (calyx, corolla, nectaria, androeceum et gynoeceum) liberi repraesentant in *Thoranthis* s. *Hypogynis*, ut tandem in Polypetalis-polycarpicis summa vegetabilium evolutio appareat. Talem vero floris metamorphosin progredientem evolutio foliorum non raro antecedit: hinc folia jamjam perfecta, rarius tamen composita, in Monochlamydeis saepe observantur; generatim perfectiora, vix unquam tamen articulata, in Synpetalis obveniunt, perfectissima vero Leguminosis (polypetalis) propria sunt, dum metamorphosis eorum retrograda-hebetata seu Anamorphosis (folia integra s. pinnata coalita) in Polycarpicis passim cernitur.

Quæ de foliis, flore ac fructu hic diximus, de reliquis organis quoque intelligenda, quum Natura, altera magis evolvendo, altera hebetando, producta sua variat, atque *perfectitudo eorum non in singulis, sed summatim conceptis, cognoscitur.*

Perquam manifestam similitudinem, quæ Algas, Mucedines, Fungos, Polyparia animata et Acalephas intercedit, observantes, quandoquidem a cæteris plantis et animalibus hæc Naturæ amphotera producta toto abhorrent habitu, novum ex iis Circulum corporum organicorum

seu *Phytozoorum* stabilire ausi sumus, characterem ejus in statu accreto vel aquæ immerso, adinstar plantae (*Lemnae*), substantia vero gelatinosa, plus minusve azotea-calcarea, ac motu jam automatico partium ligatarum quandoque prædita, ponendo.

Comparentur *Spongia*, *Corallina*, *Sertularia*, *Flustra*, variae *Madreporinae*, *Zoanthus*, *Actinia* cum *Clathro*, *Lycopodaceis* et *Mucoribus*; *Fungia* et *Agaricia* cum *Agaricis*; *Gorgonia* et *Corallia* cum *Clavariis*. Respiciatur massa *Fucorum* cartilaginea, raro virescens, modus sese propagandi *Conjugatarum* et motus *Oscillatoriarum*.

Jam vero genitalia plantarum et animalium maxime inter se conveniunt; quapropter et circulus corporum organicorum intermediarum ea praeprimis repræsentare videtur: *Ligamenta* lata ac rotunda uteri et tubas *Fallopianas*, ovula transmittentes, *Algæ* sistunt; ovula isolata vel ovaria, illis prægnantia, *Uredineæ*, *Mucedineæ* et *Gasteromyci* simulantur; magis evoluti *Hymenomyci* pro-sapiam membri virilis induunt (*Phallus*); *Polypi* uteros vel potius tubas *Fallopianas* fimbriatas præ se ferunt; *Acalephas* nutriri ope cirrorum copiosorum, velut *Lemna* radiculis, et cloaca excretoria, non vero ventriculo, prædita esse, vix dubitamus. Sed *Algæ* et *Fungi* motu automatico vix non semper carent, velut *ligamenta*, ovula et ovaria — organa animalium mere vegetativa; motu jam manifesto in *Polypis* et *Acalephis*, quum fimbrias tubarum activas et cloacas magis animalisatas, repræsentent; ergo et hujus circuli character ambiguus.

Circulus Phytozoorum in 4 classes distribuitur: *Algas*, *Fungos*, *Polyparios* et *Acalephas*, libero statu jam meris animalibus propinquas.

Corpora organica, perfecte a terra soluta (paucis exceptis), tubo cibario, magis evoluto, motuque automatico perfectiori gaudentia, vera *Animalia* nobis sunt, in tres sectiones, totidem cavis generalibus Hominis respondent, *abdominali* nempe, *thoracico* et *cephalico*, dispescenda, et re vera *Infusoria*, *Entozoa*, *Echinodermata* ac *Mollusca* animalia ventralia seu *Gasterozoa* sunt; easdem 4 classes repetunt totidem animalium articulorum s. *Thoracozoorum*: *Annulata*, *Arachnida*, *Insecta* et *Crustacea*; cum ultimis nexum naturalem quidam pisces (*Diodon*, *Ostracion*, *Hippocampus*, *Amphisilis*) alunt, novaque altiori evolutione prodeunt quatuor classes *Vertebratorum* seu *Cephalozoorum*: *Pisces*, nempe *Amphibia*, *Aves* et *Mammalia*, in quibus vera capitis apparet effigies, ut tandem in Organismo humano se perfectissimam prodat.

Hæc ergo omnia nonnisi præcedunt perfectissimæ Naturæ progeniei-Organismo humano, quo illa omnia sua producta culminat atque coronat, multivarias formas ad unitatem harmonicam cogens, animalitatem cum idea rationis combinans, semetque integram in eo declarans. Homo ergo et sui et autocratiae? Naturæ conscius, supra omnia animalia longe evehitur, omnibus numeris, qua perfectus Microcosmus, Macrocosmo respondens, incolumis Naturæ filius, neque cum cæteris animalibus in eundem circulum cogendus; utpote qua

perfectissimus ac tenerrimus plurimis morbis mentis et corporis, innatis v. acquisitis succumbit; voluntate libera abutens, vitiis ignominiosissimis defædatur; educatione per sæcula neglectâ, animalibus par fit, imo ista omnis generis vitiis antecellit; illa perversâ rudem, superstitiosum se prodit; vanitate sophistica ductus, Creatorem suum, vulgari Philosophia haud tractandum, præternoscit. Tanta autem labes humanæ gentis non vetat hominem esse talem, qualem Ecclesia notat: »Истинный Христiанинъ есть дитя Божіе, дитя благодати и свѣта, дитя Церкви, храмъ Духа Святаго, онъ есть членъ Иисуса Христа, сонаслѣдникъ съ нимъ Царствiя небеснаго.« De quonam alio animali, quæso, hæc probe intellecta, dici possent?



M O R P H O L O G I A.

1. *Morphologia anorganicorum.*

Naturæ producta elementaria (Sulphur, Platinum, Oxygenium etc.) vel e duobus, chemice junctis elementis simplicibus vel compositis conflata, ergo semper binaria: (Metallum seu Metalloidum cum Oxygenio, Sulphure, Chloro etc.; — Oxidum metallicum aut metalloïdicum cum aqua, silicia vel acido quocunque; — Sal quodcunque cum Aqua, positivæ v. negativæ partis constitutivæ vices gerente etc.), in toto Planetæ viventia, per se vero non-nisi in conceptione viva, varias formas (crystallinas) præ

se ferunt, variisque qualitatibus physicis pollent, nulla metamorphosi, ultra conceptionem progrediente, conspicuâ, sed retrogradam patiuntur, postquam violentiae potentiarum externarum exposita fuissent, fatiscunt nempe, liquefiunt, formam crystallinam amittunt, destruuntur, aut novis corporibus epigeneticis-parasiticis originem præbent, e. g. e sulphureto metallico sulphas (vitriolum) oritur.

2. *Morphologia Vegetabilium.*

E cauliculo embryonis vel generatione æquivocâ oriunda planta propagat cellulas, sursum ad lucem et deorsum versûs centrum terrae tendentes: Terreus truncus (rhizoma) vel ejus rami dissoluti (fibrillae) spongiolorum ope nutrimentum e solo natali (terra, raro aqua vel alia planta) sugunt, veluti folia stomatibus aërem bibunt; quidam eorum organa propagativa, terrestria aut semiterrestria, progenerant (tubera, bulbos, stolones, sarmen-
ta). Magis autem variat evolutio trunci et ramorum solarium, dum ista expanduntur in folia, organa elementaria plantae, e petiolo, lamina et stomatibus constantia, quasque partes facile in omnibus, quae Regnum vegetabile organa prodit, invenies; desunt vero stomata plantis mere cellularibus (ac muscorum foliis); absolutus petiolus nonnisi in perfectioribus (Spermophoris) apparet, in Gramineis ac similibus cum stipulis adhuc confluent, vaginas earum efficit, in Liliaceis cum lamina colliquatur. Foliatione expedita, ni suppressa fuerit in aphyllis, concentratur vis vitalis in cacumine vel ad latera trunci et ramorum ad nova progeneranda organa, florem nempe, fructui præeuntem, quod sequenti modo fit: petiolus

simplex vel ramificatus (vario inflorescentiae modo) partem laminarem coacervat in globulos, multifariam evolutionem tandem in perfectioribus plantis subeuntes, inde varius numerus verticillorum floralium prodit: flos nudus fæmineus, masculus aut hermaphroditus, — monochlamydeus, dichlamydeus vel nectariis auctus; inferiori evolutione verticilli inter se conglutinati et partes eorum connatae vel per abortum defectuosae apparent: flores epigyni, perigyni; ovarium unicum centrale et excentricum, — androeceum, corolla, calyx et involucra circularia, symmera, et unilateralia-dimidiata.

Essentialis pars floris est ovulum, in embryonem actu fæcundationis sese evolvens, seu stoma, auram fæcundantem alliciens, fasciculo vasorum-petiolo seu spermopodio sustentatum, (quorum plura in truncos seu placentas coeunt) et variae indolis foliis obvallatum, nempe: a) valvis pericarpium, quarum stomata conferta stigmata efficiunt, fovillam pollinis imbibentia; b) androcei et corollae partibus, in quibus petiolus in filamenta et ungues, lamina in petala et bursas polliniferas seu antheras efformantur; stomata vero indolem pollinis præ se ferunt; c) in superioribus plantis calyx superadditur, organon mere foliaceum, muniens, vel bracteae foliis, in perigonium transfigurandis, præeunt, petala inter et stamina quandoque media organa exsurgunt, nectaria sic dicta. Omnis ergo nisus formativus plantae eo præcipue tendit, ut spongiolas ad nutrimenta haurienda, stomata ad aërem alliciendum, et ovula ad speciem propagandam producat. Simplex organisatio Hypoxylorum et Lichenum hæc omnia absolvere debet, nullis perfectis.

CARPOLOGIAE SUPPLEMENTUM.

Sporangia, cellulis solutis s. *sporis* farcta, (*) integra, ruptilia v. valvata, omnibus Cryptogamis propria sunt, exceptis apotheciis sporangiophoris *Lichenum* et thecis operculatis ac columellatis *Muscorum*.

Sporae conferruminatae in unam duasve massas integras (embryonem simplicem s. monocotyledoneum et albumen) *Grana* Coccophorarum efficiunt; embryo fissus, albumini adcretus, *Semina spuria* denotat; ille vero partitus magisque compositus in *Seminibus veris* apparet.

Spermogenesin Natura ipsa declarat Filicum foliis (*Ophioglossum*, *Polypodium*, *Blechnum*, *Pteris*) nec non *Cactis angulatis aphyllis*. Semina oriuntur e placenta axili, quandoque angulata (toro producto) in *Caryophyllis*, *Primulaceis*, *Ericaceis*, *Hypericaceis*; e pariete valvarum (foliorum pistillarum) in *Butomaceis*; e costis mediis valvarum, quandoque productis, in *Acanthaceis*, *Vio-
laceis* etc., e marginibus valvarum, plus minusve introflexarum, in *Helleboreis*, *Astragalo* etc. Hinc semina axilia, parietalia, costalia, marginali-parietalia, centromarginalia (axi deficiente?) et parietali-marginalia (*Cucurbitacearum*) distinguenda.

Fructus e valvis (foliis) planis, conduplicatis v. vario typo involutis, plus minusve connatis et circa axin idealem v. realem (caudicem) verticillatis, raro spicatis, (ni

(*) Vid. Hugo Mohl Bemerkungen üb. die Entwicklung u. d. Bau der Sporen. Allgem. botan. Zeitung. 1855. No. 5 — 4.

valva solitaria sit), coalescit, toro quandoque et calyci innatus: ergo stirps tota contracta et ad utriculum simplicem interdum reducta.

Caryopsis et **Utriculus** nonnisi ex ovario libero prodeunt; valvis abortivis et concretis, cavitate hinc mono-v. oligosperma, **Samara** dicitur.

Folliculus est valva, margine seminifero vel rarius costâ (in *Penthor*) dehiscens; **Legumen**-idem, dehiscencia marginali et costali, ni in utriculos contiguos abeat (*phragmiferum*).

Capsula, ex ovario libero quoque oriunda, e valvis centripetis (folliculis centrospermis) — vel e valvis, vix involutis concretis (seminibus tunc parietalibus, costalibus, marginalibus vel axilibus) coalescit. **Siliqua** dicitur capsula bivalvis, seminibus placentae septiformis margini adfixis.

Diploë v. torus, post fœcundationem succulenta, e quoque fructu **Baccam** effingunt.

Utriculus mono-v. plejospermus, mesocarpio indurato, in **Nucem** transformatur; eodem vero intus indurato, extus carnoso v. spongioso, in **Drupam** abit.

Hesperidium est capsula valvis centripetis succulentis, circa axin verticillatis, toro inclusa: *Citrus*, *Garcinia*, *Nymphaea*.

Amalthæam dico quemque fructum, ex ovario 1-v. pluriloculari, toro et calyci adcreto s. infero, ortum; est unilocularis s. **Achenium** *Synanthereis* et *Dipsaceis*, subtrilocularis quibusdam *Valerianeis*, **baccata** 3-locularis *Viburneis*, et 4-locularis *Vacciniaceis*; bilocularis, bipartibilis et polysperma *Cin-*

choneis, 3-locularis, axi dehiscens *Melaleuca*; trilocularis et 3-partibilis *Irideis*. etc. **Pepo** dicitur, valvis ad centrum et tandem ad parietem productis, seminibus parietali-marginalibus, toro carnescente.

Pomum est amalthæa toro (et mesocarpio?) post fecundationem carnosio v. suberoso; — folliculare *Pyri*, utriculare *Sorbi*, *Rosae*, *Poterii*; in achenium simplex transit in *Alchemilla*. Calyce secedente fructus *Spiraeacearum* et *Amygdalacearum* denudantur.

Caryopsides, nuces v. drupae (4 — 5), apice toro plano v. subproducto insertae, **Coenobium** (Exostylium) formant: microbasicum *Labiatar.* et *Boraginearum*, sarcobasicum *Simarubearum*.

Carpella fasciculata, axi nulla v. illi tenui adfixa, **Dieresilem** efficiunt; follicularem *Crassulacearum*, *Helleborearum*, *Asclepiadearum*, *Colchicacear.*, utricularem *Euphorbiacear.* *Geraniacear.* *Coriariacearum*.

Carpella imbricata v. verticillata supra torum productum, **Syncarpium** effingunt; acinosum *Rubi*, sarcobasicum *Fragariae*, utriculare *Ranunculi*, *Myosuri*; samaraceum *Liriodendri*, verticillatum *Malvacearum*.

Sorosus e fructibus, immediate conferruminatis, oritur. *Ananas*, *Artocarpus*.

Syconus e fructibus v. carpellis, toro v. involucrio carnosio immersis, prodit: *Ficus*, *Dorstenia*, *Nelumbium*.

Strobilus est amentum persistens, fructificans, bracteis induratis planis. **Galbalus**-idem, bracteis peltatis; **Arceuthida**-idem, oligospermum, bracteis baccatis, — *Juniperi*, *Taxi*.

Abortus et connubium variorum typorum hac formas modificant. Nomina, jam a Phytologis usitata, nostrae carpologiae accomodare studuimus, ne Terminologia incassum augeatur.

3. *Morphologia Phytozoorum.*

Phytozoorum generatio, ut plurimum æquivoca, leges generationis mineralium, plantarum et animalium conjungere videtur, utpote jam **Delametherie**, **Medicus** et **Maerklin** formationem fungorum (et lichenum, in cavernis lapideis oriundorum) cum crystallisatione vera comparavêre.

Fungis massa fere homogœnea (tremellinis), vel vario contextu cellularum in peculiaria organa formanda, propria est. Fuci et Conservae omni superficie nutrimentum imbibunt. Spongia est substantia animalis azotea, homogœnea, absque floribus animatis. Corallia crystallisatione lenta volumen augent, velut mineralia, crescunt ad instar vegetabilium, floresque animatos v. gemmas fructusve proferunt. Acalephas, e muco aquæ marinae laxissime coacervato et vivificato ortas, filis copiosis longissimis, quasi radicibus, potius nutriri, quam ore cavi coeci, quibusdam earum proprii-et cloacam excretoriam verosimile repræsentantis, admittere vellem; utut per propagines et forsàn ovula sese reproducentes, jam veris animalibus magis appropinquantur.

4. *Morphologia Animalium et Hominis.*

Cellulosa minus regularis, sed in cavitates vacuas, tum pulpâ nerveâ, tum succo consistentiori, tum materia cal-

careæ vel osseæ refertas, efformatur, dum organis vegetativis et propagativis, iisque magis compositis, illa locomotivitatæ et sensibilitatis, plus minusve perfecta, superadduntur Organismo animali, qui plantam *intricatam*, a Macrocosmo solutam et proprio solo gaudentem, sistit; hinc tubo cibario, ore gustatorio et ano excretorio ut plurimum prædito, instruitur ad escam, sublimioris organisationis capacem, præparandam, quæ extus assumpta vel in intimis omnis Organismi deposita, vasa lymphatica et lactea (fibras radicales) ascendit, inque vasis capillaribus (descendentibus) in massam organicam coalescit, et quidem:

1). In *Infusoriis* minutissimis os, ventriculus multiplex, intestina et in quibusdam oculi, observante Nordmanno, apparent.

2). In *Entozois* intestina ut plurimum utrinque pervia, musculi, sexualia evoluta, imo jam nervi, vasa et oculi in nonnullis observantur.

3). *Echinodermis* (raro fixatis) tubus cibarius perfectior, circulus nerveus pentagonus, arteriæ et venæ nec non pedunculi, corpus moventes, propria sunt.

4). Viscera abdominalia perfectiora, vasa corde imperfecto, nervi magis evoluti, caput primum vel hebetatum quibusdam, imo oculis perfectioribus ac organis auditus præditi, facile in *Molluscis*, conchæ calcareæ vel cochleæ (sceleto viscerali) inclusis, — acephalis vel cephalophoris, demonstrantur.

5). Columna vertebralis primordialis, qualis in primo fœtu humano cernitur, in sceleton seu vertebrae dermaticas *Articulorum* efformata, intus viscera perfectiora,

nervos, musculos, vas dorsale simplex vel magis complicata fovens, extus passim extremitates articulatas vel numerosissimas, quibusdam in alas transformatis, producens, nec non caput hebetatum, ganglio nuchali atque oculis simplicibus, aggregatis seu compositis, organis tactus (antennis et palpis) et in altioribus auditus et olfactus instructum, novum altiore circulo animalium *Articulatores* denotant, in quatuor Classes: *Annulatores*, *Arachnidorum*, *Insectorum* et *Crustaceorum* discedentem. Summe evoluta Crustacea analogia inter Vertebrata habent in Piscibus cataphractis, Cheloniis et Dasypo.

6). Evolutione altius progrediente in *Vertebratis*, effinguntur: Sceletum internum, plus minusve compositum; caput magis magisque absolutum, organis sensuum perfectioribus conspicuum; systema nerveum duplex-vegetativum et animale; vasa sanguifera perfecta, lymphaticis et capillaribus interposita cordeque vero coronata; sexus semper distinctus, ni monstrosus sit; systema chylopoëticum organis auxiliariis perfectioribus præditum; organa respirationis magis separata, os vero simplicius (mandibulae et maxillae insectorum in 2 maxillas connatae, labrum et labium in labia circularia confluentia) et extremitates minus numerosae, imo hebetatae, his animalibus propria sunt. Et quidem in *Piscibus* genitalia præcoeteris organis dominantur, *Amphibiis* venter, *Avibus* thorax eminent; *Mammalia* capite perfectiori et æquivalentia cæterarum cavitatum jam sese appropinquant *Homini*, anatomice quidem analogo, sed psychicis facul-

tatibus æque distincto, ut plantae ab animalibus, loquelae ignaris.

Homo ergo peculiarem cyclum atque corollarium harmonicum omnium Naturae productorum efficit. Verteres eum *animal* rationale dixere; eodem jure *planta* libera, motu automatico et ratione prædita — vel *minérale*, a terra solutum, metamorphosi continua, motu automatico et ratione excellens, dici posset. Ut denique relatio animalium et hominis ad plantas demonstretur, hujus perfectissimi fabricam physiologice investigare conabimur, e quibus pateret, Naturam in Hominis evolutione omnes suas reliquas formationes certo æquilibrio concinnasse.

In ovulo seu vesicula Graafiana, processu fæcundationis excitata, oritur vesicula fætus primordialis adinstar nuclei crystallini; ovulum prægnans, nunc activum, uterum intrat ibique adinstar plantae irradicatur fibrillis, e chorione propullulantibus, e quæis tandem placenta uteri fit; primordiali cellulæ novis superadditis, fætus formam vermiculi annulati induit, in columnam vertebralem, caput et extremitates tandem evolvendi, ni monstrum acephalum, anencephalum vel extremitatibus destitutum, Molluscorum vel Articulatorum quorundam more, proditurum sit; *vesiculæ umbilicali* seu intestinali additur sexualis seu *Allantois*; fætum circumdat vesicula cutanea seu *Amnios*, superficiales partes corporis deponens; radiculae *Chorionis* extus in placentam respiratoriam coacervantur, intus vero vasa demittunt ad funiculum umbilicalem formandum. Evanescente allantoide, urocystis et organa sexualia effinguntur; vesicula umbilicalis in tu-

bum cibarium (intestina crassa, ano pervio, et tenuia in ventriculum distenta, variis appendicibus — hepate, liene, pancreate — instructa et oesophago terminata) evolvitur; præparantur pulmones, in foetu, a matre soluto, munere placentæ functuri, nec non renes. Omnibus nunc ad vitam sui generis sublimiorem peragendam adæquatis organis pollens homo nascitur — atque plantam repræsentat liberam, nec crudo terræ succo, sed chylo, e vesca ore sensitivo electâ, in ventriculo et intestinis, adjuvantibus hepate, liene et pancreate, elaborata, nec non lympa, in omnibus partibus corporis secreta, sese nutrientem. Vasa lactea et lymphatica, radiculis plantarum analogâ, absorbent chylum et lympham, quæ tandem per ductus thoracicos, (quasi caules) feruntur ad pulmones seu folia, cum aëre communicantia, bronchiis et trachea (plantis deficientibus) aucta, inque venis, arteriis et corde, (quibus plantæ carent) magis assimilantur, ut tandem in vasis capillaribus, more plantarum, solidescant.

Evolvitur insimul flos reproductivus, non ad coelum versus et organismum ornans, sed obscoenus, terram spectans, novo organo, versus coelum efflorescenti — systemati nerveo — locum cedens.

Ipsi flori animali reproductivo major compositio seu organisationis partitio propria est: bracteas quasi ligamenta uteri æmulantur; ovariis tubæ Fallopianæ et uterus superadduntur; antheris (testiculis) epididymis et vas deferens adnascuntur; perigonium in vaginam, clitoride auctam, et scrotum, pene instructum, evolvitur. Sequitur inde, uterum pistillo plantarum quidem analogum, sed eo diversum esse, ut ovula ex ovariis discretis non-

nisi post fœcundationem suscipiat, vasa spermatica cum testiculis stamina repræsentare, vaginam et scrotum perigonia esse. Altior autem hujus floris animalis evolutio apparet in additamentis, nempe: ovariis discretis, tubis Fallopiæ, epididymide, vasi deferente et pene (calcare florum forsân æquiparando), quæ in plantis omnino desiderantur, genitalibus earum post quamque fructificationem evanescentibus et facile denuo prognerandis, facultate ultima animalibus denegata.

Systema nerveum denique, sceleton ac fibra muscularis mera animalia organa sunt, nil commune cum organis vegetabilium habentia, mobilitasque partium plantarum nonnisi cum contractilitate uteri et pulmonum (spasmodica) comparanda esset.

Hisce præmissis sequentem productorum naturalium ordinem stabilire ratum habemus:

A. REGNUM AMORPHO-ANORGANICUM.

1. Aether-(Ignis), e quo omne materiale prodiit.
2. Aqua, menstruum materiale commune omnium, in
3. Aërem et
4. Circulum corporum anorganicorum solidorum discedens, quorum Elementa chemica sunt sequentia:
 - a). *Ametallica*: Oxygenium, Phthorum, Chlorum, Bromium, Jodum, Selenium, Azotum, Sulphur, Phosphorus, Carboneum, Borum, Silicium et Hydrium.
 - b). *Metalloidea—hydrazoticae regionis*: 1) *Alcaligena*: Ammonium, Potassium, Sodium et Lithium. 2) *Lithal-*

caligena: Baryum, Strontium, Calcium et Magnium. 3)
Lithogena: Glycium, Alumium, Zirconium, Yttrium et Thorium?

c) *Metallica hydrocarbonicae regionis, ægre desoxydabilia, vix fusibilia*: Iridium, Rhodium? Cerium, Uranium, Chromium, Tantalum, Titanium, Vanadium, Molybdænum, Scheelium, Manganum, Cobaltum, Ferrum, Niccolum et Cuprum.

d). *Metallica oxyazoteae regionis — magis volatilia*: Stannum, Plumbum, Cadmium, Zincum, Bismuthum, Stibium, Arsenicum, Tellurium, Hydrargyrum et Osmium?

e). *Metallica oxycarboneae regionis seu nobilia, ægre oxydanda*: Argentum, Palladium, Aurum et Platinum.

E his coalescens Circulus anorganicus s. molecularis in quatuor Classes distribuitur: *Metallitorum* nempe, *Silicidorum*, *Halitorum* et *Pyroitorum*.

CLASSIS 1. METALLITA.

Metalla regulina, ligaturae metallica, metalla oxygenata, connubia oxidorum cum aqua, variis acidis, silicia, alumia, calcia — nec non Chloreta, Selenieta, Arsenieta et Sulphureta metallica.

I.

1. Platinum nativum — (palladii-rhodii-auri-ferri-cupriferum, osmiridio concomitatum). P. sp. 17 — 19 — 23.

II.

1. Aurum nativum. Dur. = 2, 5 — 3. P. = 12 — 19,4.
2. Aurum argenteo-telluriatum. 3 + 1 + 6. (*Tellurium graphicum*).

III.

1. Argentum nativum (auri-cupri-ferri-arseniferum).
Dur. = 2, 5 — 3. Pond. sp. = 10,3 — 10,5.
2. Argentum tri-et 12-auratum.
3. Argentum bi-et trihydrargyrum (самородная амальгама).
4. Argent. telluriatum.
5. Argent. semistibiatum. 76,5 + 23,5.
6. Argent. stibiato-sulphuratum (59,1 + 23,4 + 17,5). (*) красная серебряная бленда.
7. Argent. arseniato-sulphuratum. 3: 2: 6. (**)
8. Argent. sulphuratum (87 + 13). Серебр. блескъ.
9. Argent. seleniatum plumbosum. 65,56 + 24,05 + 6,79.
10. Argento-cuprum seleniatum.
11. Argentum chloratum (*Luna cornea*). 75,3 + 24,7.
12. Argent. carbonicum.

IV.

1. Hydrargyrum nativum. P. sp. = 13,5 — 13,6.
2. Hydrargyrum semichloratum. (85 + 15).
3. Hydrargyr. sulphuratum (hepaticum, ferratum)
s. Cinnabaris. 86,3 + 13,7.

V.

1. Arsenicum nativum (stibii-cobalti-ferriferum). *Cobaltum Pharmacopæorum*. D. = 3, 5. P. = 5,7—6.
2. Arsenicum acidulum s. Acid. arsenicosum.
3. Arsenias calciae 5-hydratus (*Pharmacolithus*).

(*) Constat e 59,1 part. argenti, 23,4 stibii et 17,5 sulphuris.

(**) 3 atomi argenti, 2 atomi arsenici et 6 atomi sulphuris.

4. Arsenicum sulphuratum rubrum (*Realgar, Sandaraca*). 70 + 30. D. 1,5 — 2. P. 3,4 — 3,6.
5. Arsenicum sesquisulphuratum flavum (*Auripigmentum*). 61 + 39. D. et P. eadem.
6. Arsenicum stibiato-sulphuratum argentatum (*Mine-
ra argenti alba*). 38 + 12 + 15,3 + 17 — 7.

VI.

1. Tellurium nativum (*auro-ferriferum*). D. = 2 — 2,5.
P. sp. = 6,1 — 6,4.

VII.

1. Stibium nativum. D. = 3 — 3,5. P. = 6,6 — 6,8.
2. Stibium sescoxydatum. (*Сурьмяная охра*).
3. Stib. sesquisulphuratum (argenti-cupri-niccoliferum).
Сурьмяной блескъ. 72,9 + 27,1.
4. Stibium sesquisulphurat. cupreo-plumbosum (*Bour-
nonit.*)
5. Stibium sescoxysulphuratum. (*Красная сурьмяная
бленда.*)

VIII.

1. Bismuthum nativum. — D. = 2 — 2,5. P. = 9,6.
2. Bismuthum oxidatum.
3. Bismuthum carbonicum.
4. Bismuthum selenio-telluriatum.
5. Bismuthum bisulphuratum cupreo-plumbosum.

IX.

1. Plumbum nativum?
2. Plumbum oxidatum.
3. Plumbum carbonicum (*Блѣлая свинцовая руда*).
(83,58 + 16,42). rhombicum. — D. = 3 — 3,5.
P. = 6,5.

4. Plumb. sulphuricum. (Свинцовый купоросъ.)
5. Plumb. chlorophosphoricum et chlorarsenicicum s. *Pyromorphites* - hexagonale. D. = 3,5 — 4. P. = 6,9 — 7,3.
6. Plumbum arsenicicum?
7. Plumbum scheelicum.
8. Plumbum molybdænicum. (Желтая св. руда).
9. Plumbum chromicum. (Красная св. руда).
10. Plumbum bichromicum cupratum (*Vauquelinites*).
11. Plumbum alumicum.
12. Plumbum seleniatum (cupratum-hydrargyratum).
13. Plumbum sulphuratum (Свинцовый блескъ). (86,7 + 13,3.) tesserale(hexaëdric.M.) D. = 2,5. P. = 7,5.
14. Plumbum telluriatum.
15. Plumbaurum telluriatum (Нагелянская руда).

X.

1. Stannum bioxidatum. (Оловянный камень).
2. Stannum sulphuratum. (Олов. колчеданъ).

XI.

1. Zincum oxidatum-(ferriferum).
2. Zincum carbonicum (cadmiiferum) *Lapis calaminaris*. rhomboëdric. D. = 5. P. = 4,4 — 4,5.
3. Zincum sulphuricum 7 - hydratum (большой цинковый купоросъ).
4. Zincum phosphoricum.
5. Zincum silicicum hydratum (*Lapis calaminaris siliacus*—rhombic.(prismatic. M.) D. = 5. P. = 3,5.
6. Zincum 6 - alumicum hydratum (*Automolithus*).
7. Zincum sulphuratum. (Цинковая блenda).

XII.

1. Cuprum nativum. D. = 2,5 — 3. P. = 8,3 — 9.
2. Cuprum semioxidatum — (Красная лѣдная руда).
3. Cuprum sesquisilicicum bihydratum (*Dioplas, Aschirite*).
4. Cuprum bisilicicum bihydratum (Кремнистый малахитъ).
5. Cuprum semicarbonicum hydratum (Малахитъ).
6. Cuprum $\frac{2}{3}$ carbonicum hydratum (Лѣдная лазурь).
7. Cuprum submuriaticum hydratum. (*Atacamite*).
8. Cuprum semiphosphoricum hydratum.
9. Cuprum sulphuricum 5-hydratum (Синій купоросъ).
10. Cuprum quintarsenicicum 3-hydratum (Черешневая руда).
11. Cuprum quartarsenicicum $\frac{2}{3}$ -hydratum (Лѣдная слюда).
12. Cuprum semiarsenicicum bihydratum (*Euchroites*).
13. Cuprum subarsenicicum bihydratum (*Olivenite*).
14. Cuprum seleniatum.
15. Cuprum semisulphuratum — (Ромбическій лѣдн. блескъ.) (80 + 20) D. = 2,5 — 3.
16. Cuproferrum sulpharseniatum v. sulphostibiatum (тетраэдрический лѣдн. блескъ. *Fahlerz*).
17. Cuproferrum sulphuratum — тетрагональный лѣд. колледанъ. (35 + 30 + 35).

18. Cuproferrum supersemisulphuratum — *октаэдрич. льди. колледанз.* (65 + 13,3 + 23,7).

19. Cuprum arseniatum.

XIII.

1. Niccolum arsenicicum hydratum (*Никкелева охра*).

2. Niccol. sulphuratum (65 + 35) — (*Волосной колледанз*).

3. Niccol. arseniatum (51 + 49) — (*Kupfernickel*).

XVI.

1. Cobaltum oxidatum hydratum (nigrum).

2. Cobaltum sulphuricum (*Розовый купоросъ*).

3. Cobaltum sescarsenicicum 3-hydratum (rubrum).

4. Cobaltum biarseniato - sulphuratum. 2: 2. 2.

5. Cobalto-ferrum bisulpharseniatum. 2: 1 + 1: 5.

XV.

1. Ferrum nativum: meteoricum, vulcanicum, pseudovulcanicum et telluricum? D. = 5 — 6. P. = 7,5 — 7,8.

2. Ferrum oxidato-oxidulatum. 2: 1. (*Magnes*).

3. Ferrum oxidatum zinco-manganicum (*Franklinit.*)

4. Ferrum sesquioxidatum: *Ferrum speculare, Lapis hæmatites, ferr. argillaceum et siliceum.*

5. Ferrum oxidatum hydratum: *Бурый железный камень, Lapis aëtites etc.*

6. Ferrum oxalicum (*Humboldtites*).

7. Ferrum carbonicum (*Sphærosiderites*).

8. Ferrum sulphuricum 6-hydratum (*Зеленый купоросъ*).

9. Ferrum phosphoricum. *Синяя желъзн. руда.*

10. Ferro-manganum phosphoricum.

11. Ferrum silicicum. (*Hisingerit*). Idem c. mangano.
12. Ferrum arsenicicum 6-hydratum (*Scorodit*).
13. Ferrum $\frac{2}{3}$ -arsenicicum 6-hydratum (*Würfelerz*).
14. Ferrum quadrititanicum (*Nigrin*).
15. Ferrum titanicum - (*Ilmenit*).
16. Ferrum semititanicum (*Menakan*).
17. Ferrum quartotitanicum (*Iserin*).
18. Ferrum octavotitanicum. (*Магнитный песок*).
19. Ferrum tantalicum (*Tantalit*.) - manganiferum.
- 20 Ferrum scheelicum (*Wolfram*).
21. Ferrum supersulphuratum. *Магнитный железн. колчеданъ*. (59,6 + 40,4). hexagonal. D. = 3,5 — 4,5. P. = 4,5 — 4,7.
22. Ferrum subbisulphuratum. *Печенковъй желъз. колчеданъ*. rhombic. (prismat. M). D. = 6 — 6,5. P. 4,6 — 4,9.
23. Ferrum bisulphuratum. *Кубическй желъз. колчеданъ*. (45,76 + 54,24.) D. = 6 — 6,5. P. = 5.
24. Ferrum bisulpharseniatum. *Мышьиный колчеданъ*. (33,5 + 20 + 46,5)—rhombic. D. = 5,5—6. P. = 6 — 6,2.

XVI.

1. Manganum subbioxidatum. *Твердая марганцовая руда*.
2. Manganum bioxidatum oxidulatum. *Черная марганц. руда*.
3. Mangan. sescoxidatum semihydratum. *Мякая и блестящая марганц. руда*.
4. Mangan. suboxidatum ferricum hydratum (*Wad*).
5. Mangano-ferridulum semiphosphoricum (*Triplit*).

6. Manganum carbonicum-(*Rodochrosites*).
7. Manganidulum sulphurato - carbonicum - *Марс. блестя.*
8. Manganidulum silicicum et sesquisilicicum.
9. Manganidulum bisilicicum (*Орлеуз*).

XVII.

1. Molybdaenum oxidatum. (*Молибденова охра*).
2. Molybdænum sulphuratum (*Молибд. блестя.*) 60 + 40.

XVIII.

1. Chrómium oxidatum viride (et Ouvarovites?).

XIX.

1. Scheelium calcareum s. Scheelias calciae.

XX.

1. Tantalium yttreum (ferri-schelii - urani - calciferum) - (*Yttrotantalites*).

XXI.

1. Titanium bioxidatum s. acidum.
 - a) Anatas. s. Octaëdrites.
 - b) Rutilus.

XXII.

1. Uranium oxidulatum. — *Уранова смоляная руда.*
2. Uranocalcia subphosphorica 3- et 4-hydrata (*Uranites*).

XXIII.

1. Cerium fluoricum yttriatum.
2. Cerium subfluoricum hydratum.
3. Cerio-yttrium silicofluoricum calciferricum.
4. Cerium silicicum hydratum (*Cererites*).

Nota: Numeri, quibusdam mineris adscripti, rationem partium constitutarum ($0 + 0 + 0$) v. calculum atomorum ($0: 0. 0:$), D. duritiem, P. pondus specificum indicant. Durities determinatur ad Scalam decimalem **Mohsii**, quam constituunt decem mineralia sequenti ordine: 1 Talcum (venet.); 2 Gypsum; 3 Spathum calcareum; 4 Fluor; 5 Apatites; 6 Orthoclas; 7 Quarzum; 8 Topasius; 9 Corundum; 10 Adamas.

Magis naturalis esset divisio Metallitorum in Metalla nativa, simplicia et ligata, subjunctis Tellurietis, Arsenietis etc.; — Sulphureta cum Selenietis et Iodetis, — Metalla oxygenata et salia metallica, cum Chloretis, Silicatibus et Hydratibus jungenda; verum illam nostram amplexi sumus, quum technicæ notioni metallorum magis respondeat.

CLASSIS II. SILICIDA.

Silicia (v. Alumia) libera— aut alumiae, magnesiae, calciae, zirconiae, glyciae, yttriae, potassae, sodae, lithiae, baryae, thoriae et aquæ v. acidis nupta, subjunctis oxidis metallicis (ferri et mangani præcipue) colorata.

SECTIO I. SILICIDA AMPHOTERA S. METALLO-METALLOIDEA.

Silicatibus metallicis (Classis antecedentis) et silicidis metalloideis s. veris interposita. Silicia, basi metallo-metalloideae juncta—vel tali metalloideae (Magnesiae præprimis), quæ facile locum cedit basi metallica-isomorphæ; hinc color passim intensus et minime constans mineralium huc pertinentium.

1. Ilvaites — Silicas calci-ferrosus. 5: 1. 4; rhombicus sec. NAUMANN (diprismaticus sec. MOHS). D. = 5,5 — 6. P. = 3,9 — 4,2.
2. Gadolinites — Silicas ferro-yttricus. 25 + 18 + 47; rhombicus (prismaticus M.). D. = 6,5 — 7. P. = 4,0 — 4,3.
3. Chrysolithus-Silicas magneticus ferratus; rhombicus (prismaticus M.). D. = 6,5 — 7. P. = 3,2 — 3,5.
Var. *Olivinus*, *Hyalosiderites*, *Chondrodites*.
4. Titanites — Subtritanosilicas calcicus; 3. 9: 5; klinorhombicus (prismaticus M.). D. = 5,5. P. = 3,5.
5. Axinites — Silicas metallo-calcalumicus; 5: 1. 1. 3; klinorhomboidicus (prismaticus M.). D. = 6,5 — 7. P. = 3,3.
6. Helvinus — $1\frac{1}{2}$ sulphosilicas glyci-manganicus; tesseralis! (tetraëdricus M.). D. = 6 — 6,5. P. = 3,2.
7. Granatus (Grossularius) — Silicas calcalumicus; tesseralis. (dodecaëdricus M.). D. = 6,5 — 7,5. P. = 3,4 — 4,3. In varietatibus: *Almandinus*, *Pyropus*, *Hessonites*? *Grossularius*, *Aplomus*, *Colophonites* et *Melanites* — calciae vel aluminae surrogantur: ferrum, manganum vel magnesia; hinc: *Silicas ferralumicus*, *manganalumicus*, vel *magnesio-alumicus* vel *ferro-magneticus*.
8. Staurolithus — Semisilicas ferralumicus, 5: 2. 8; rhombicus (prismatoidicus M.). D. = 7 — 7,5. P. = 3,4 — 3,8.
9. Turmalinus — Silicas alcalino-alumicus metallicus: (lithia, potassa, soda, magnesia, calcia, ferrum, mangan.); rhomboëdricus. D. = 7 — 7,5. P. = + 3.

Var: *albus, ruber, flavus, cæruleus, viridis, niger.*

10. Scapolithus—Silicas calcalumicus (soda). 4: 1. 2—3; tetragonalis (pyramidalis M). D. = 5 — 5,5. P. = 2,6 — 2,8.

Var. *Mejonites.*

11. Idocrasius—Silicas calcalumicus (metallicus); 5: 2. 3; tetragonalis; pyramidalis M. D. = 6,5. P. = 3,2 — 3,4.

Varr. *Vesuvianus, Egeranus, Wiluities.*

12. Epidotus—Silicas calcalumicus (metallicus); 3: 1. 2; klinorhombicus (prismatoidicus M). D. = 6—7. P. = 3,2 — 3,5.

Var. *Pistacites, Zoisites.*

13. Acmites — Bisilicas sodo-ferricus; klinorhombicus. D. = 6 — 6,5. P. = 3,2.

14. Pyroxenus — Bisilicas calcimagneticus; 4: 1. 1; klinorhombicus (paratomus M). D. = 5 — 6. P. = 3,2 — 3,5.

In varr. *Diopsides, Fassaites, Salites, Coccolithus et Augites* magnesiaie surrogantur: ferrum et manganum, siliciae vero alumia.

15. Amphibolis — Bisilicas phthoro-calci-magneticus; 9: — 1. 3; klinorhombica (hemiprismatica M). D. = 5 — 6. P. = 2,9 — 3,2.

Varr. *Grammatites, Actinotus, Hornblenda et Pargasites*, nec non *Asbestus densus, flexibilis seu Amianthus, suberiformis et xyloideus.*

16. Hypersthenus—Bisilicas magnesio-ferricus; 10: 1. 4;

rhombicus? (prismatoidicus M). D. = 6. P. = 3,3 — 3,5.

Paulites.

17. Diallagon — Smaragdites-Omphacites?

18. Bronzites — Bisilicas ferro-magneticus, 18: 2. 7. klinometricus? (hemiprismaticus M). D. = 4 — 5. P. = 3,1 — 3,3.

Anthophyllites.

19. Mica uniaxilis — Fluosilicas ferralumio - magneticus potassinus — hexagonalis; D. = 2 — 2,5. P. = 2,8 — 3.

20. Mica diaxilis — Fluo-silicas ferralumicus lithinus (potassa, mangan.), rhombica? D. = 2 — 2,5. P. = 2,86 — 3,1.

Lepidolithus.

21. Talcum — $2\frac{1}{2}$ silicas magneticus (ferralumiatus); rhombicum? D. = 1 — 1,5. P. = 2,6 — 2,8.

Varr. *Steatites*, *Lapis ollaris*, *Terra viridis*, *Veronens*. *Agalmatholithus*.

22. Chlorites — Bialumiosilicas ferro-magneticus; hexagonalis? D. = 1 — 1,5. P. = 2,6 — 2,9.

23. Spathum micans. (Schillerspath) — Trihydrosilicas ferro-magneticus; 6. 6: 1. 3; klinometric? D. = 3,5 — 4. P. = 2,68 — 2,8.

24. Serpentinus — Bihydrosilicas magneticus (ferratus), 2. 4: 3; rhombicus. D. = 3. P. = 2,4 — 2,6.

SECTIO II. SILICIDA VERA S. METALLOIDICA.

Silicia vel Alumia libera, vel Silicates aut Alumiates metalloidici, quidam hydrati deformes.

1. Quarzum — Acidum silicicum (ferro, niangano, chromio, alumia, calcia etc. inquinatum); hexagonale — (rhomboëdricum M.). D. = 7. P. = 2,5 — 2,8.

Varr. *Crystallus montana*, *Amethystus*, *Quarzum vulgare*, *Chalcedonius*, *Chrysoprasius*, *Lap. corneus*, *Pyromachus*, *Silex ferratus*, *Iaspis*, *Lapis lydius*, *Agathes*.

2. Opalus — Silicia hydrata, — 00,5 — 0,15 aquæ (c. alumia, ferro, zirconia, calce).
D. = 5,5 — 6,5. P. = 2 — 2,2.

Varr. *Opal. nobilis*, *igneus*, *vulgaris*, *Hydrophatus*, *Semiopalus*, *Jaspopalus*, *Menilites*, *Hyalites*, *Cacholongus*.

3. Perlites (Perlstein) — Sexsilicas potassaluminicus hydratus: 42 : 1.6. D. = 6. P. = 2,2 — 2,4.
4. Resinites (Pechstein) — 5-silicas sodaluminicus hydratus: 55 : 1.10. D. = 5,5 — 6. P. = 2,1 — 2,3.
5. Obsidianus — Sexsilicas alcalino-aluminicus: 24 : 1.3. D. = 6 — 7. P. = 2,2 — 2,4.

Var. *Lapis pumicis*.

5. Diasporus — Alumia ferrato-hydrata.
6. Corundum — Alumia durissima;
rhomboëdricum. D. = 9. P. = 4.

Var. *Corund. hyalinum* (*Sapphirus*, *Rubinus* etc.), *Spathum adamantinum*, *Lapis Smiridis*.

7. Chrysoberyllus — Silicas quadraluminicus. 19 + 81; rhombicus (prismaticus M.). D. = 8,5. P. = 3,7 — 3,8.
8. Spinellus — Sexaluminas magneticus: 85,6 + 16,4; tesseralis (dodecaëdricus M.) D. = 8. P. = 3,5.

9. Topasius—Fluosilicas alumicus: $11,3 + 34,2 + 54,5$;
rhombicus (prismaticus M.). $D = 8$. $P = 3,4 - 3,6$.
Pyrophyssalites, *Pycnites*.
10. Smaragdus—Trisilicas glycalumicus (c. ferr. chromio);
hexagonalis (rhomboëdricus M.) $D = 7,5 - 8$. $P = 2,6 - 2,8$.
Aquamarinus.
11. Zirconius — Silicas zirconicus: $34 + 66$.
Tetragonalis (pyramidalis M.). $D = 7,5$; $P = 4,4 - 4,6$.
Var. Hyacinthus.
12. Dichroites s. Jolithus — Silicas magnesio-ferralumicus;
rhombicus—(prismaticus M.). $D = 7 - 7,5$. $P = 2,5 - 2,7$.
13. Prehnites—Silicas alumio-calcicus. $7 : 3. 4$;
rhombicus (axotomus M.). $D = 6 - 7$. $P = 2,8 - 3$.
14. Nephelinus — Silicas alcalino-alumicus - $4 : 1. 3$;
hexagonalis (rhomboedricus M.). $D = 5,5 - 6$. $P = 2,5$.
15. Leucites — Bisilicas potassalumicus: $8 : 1. 3$;
tesseralis (trapezoidalis M.). $D = 5,5 - 6$. $P = 2,4$.
16. Sodalites — Chlorosilicas sodalumicus: $1. 8 : 3. 6$;
tesseralis (dodecaëdricus M.). $D = 5,5 - 6$. $P = 2,4$.
17. Häüynus — Silicas calci-sodalumicus. $9 : 1. 2. 6$;
tesseralis. $D = 5,5 - 6,5$. $P = 2,26 - 2,4$.
Lapis lazuli — Bisilicas
18. Disthenus — Semisilicas alumicus: $32 + 68$;
klinorhomboid? prismaticus. $D = 5 - 7$. $P = 3,5 - 3,7$.
Cyanites, *Rhaetizites*.
19. Andalusites — Silicas sescalumicus ferrosus;
rhombicus — prismaticus M. $D = 7,5$. $P = 3 - 3,2$.

20. Chiastolithus — Supersilicas aluminicus?
rhombicus? D. = 5—5,5. P. = 3.
21. Anorthites — Silicas magnesio-calcalumicus: 11: 1.
2. 8; klinorhomboidic. D. = 6. P. = 2,7.
22. Labradorius — Sesquisilicas sodo-calcalumicus;
klinorhomboidic? D. = 6. P. = 2,7.
23. Orthoclasius — Trisilicas potassaluminicus: 12: 1. 3;
klinorhomboidicus—(prismaticus M.). D. = 6 — 6,5.
P. = 2,6.
Varr: Adularia, Feldspathum, id. densum, Kaolinus.
Periklinus — idem?
Tetartinus — Trisilicas sodaluminicus.
24. Petalites — Trisilicas lithaluminicus: 12: 1. 3;
klinorhomboidicus? (prismaticus M.). D. = 6 — 6,5.
P. = 2,4.
25. Triphanus — Bisilicas lithaluminicus: 8: 1. 3:
rhombicus? (prismaticus M.). D. = 6,5 — 7. P. =
3,1 — 3,2.
26. Wollastonites — Bisilicas calcicus: 53,3 + 46,7;
klinorhomboidic. ? D. = 4,5 — 5. P. = 2,8 — 2,9.
27. Datholithus — Biborosilicas calcicus hydratus?
klinometricus (prismaticus M.). D. = 5—5,5 P. = 3.

SECTIO 3. SILICIDA HYDRATA CRYSTALLISATA. (Zeolithi).

1. Apophyllites — Trisilicas potasso-calcicus hydratus:
27: 1. 8; tetragonalis (pyramidalis M.). D. = 4,5—
5. P. = 2,3 — 2,5.
2. Stilbites — Trisilicas calcaluminicus hydratus: 15: 1. 4;
klinometricus (hemiprismaticus M.). D. = 3,5 — 4.
P. = 2,2 — 2,3.

3. Desminus — Trisilicas calcalumicus hydratus: 12:
1. 3; rhombicus (prismatoidicus M.). $D.=3,5-4$.
 $P.=2,1-2,2$.
4. Mesotypus — Sesquisilicas calcalumicus hydratus: 6?:
1. 3; rhombicus (prismaticus M.). $D.=5-5,5$.
 $P.=2,1-2,3$.
5. Laumontites — Bisilicas calcalumicus hydratus; klinometricus. $D.=2?$ $P.=2,3$.
6. Harmotomus — Bisilicas bary-alumicus hydratus: 10:
1—2. 4s rhombicus? (paratomus M.). $D.=4,5$ $P.=2,3$.
7. Chabasites — Bisilicas alcalino-alumicus hydratus;
rhomboëdricus. $D.=4-4,5$. $P.=2-2,2$.
8. Analcimus — Bisilicas sodalumicus hydratus: 8: 1. 3;
tesseralis (hexaëdricus M.). $D.=5,5$. $P.=2-2,2$.

CLASSIS III. HALITA.

Sales metalloïdici ex acidis: boracico, carbonico, sulphurico, phosphorico, nitrico et muriatico orti, nec non Chloreta ac Phthoreta metalloïdica et Acida hydrata.

SECTIO 1. HALOIDA — AQUAE INSOLUBILIA.

1. Boracites — Boras sesquimagnesianus; tesseralis — (octaëdricus M.). $D.=7$. $P.=3$.
2. Magnesites — Carbonas magnesianus (ferri-manganifer); rhomboëdricus (brachytypus M.). $D.=4,5$. $P.=3$.
3. Spathum talco-calcareum. — Carbonas calci-magnesianus; rhomboëdric. (macrotypus M.). $D.=4$. $P.=3$.
Miemitites. Dolomitites.
4. Spathum calcareum. — Carbonas calcicus; rhomboëdric. $D.=3$. $P.=2,5-2,8$.

- Varr. crystallisatum, lamellosum, densum. Marmor, Tofus calcareus, Creta, Lapis judaicus, Lyncurius etc.*
5. Arragonites — Carbonas calcicus strontifer;
rhombicus (prismaticus M.). D. = 4. P. = 3.
 6. Strontianites — Carbonas stronticus;
rhombicus (peritonus M.). D. = 3,5. P. = 3,6.
 7. Witherites — Carbonas baricus;
rhombic. (diprismaticus M.). D. = 3,5. P. = 4,3.
 8. Barites — Sulphas baricus;
rhombic. (prismaticus M.). D. = 3,5. P. = 4,4.
 9. Coelestinus — Sulphas stronticus;
rhombic. (prismatoidic. M.). D. = 3,5. P. = 3,9.
 10. Anhydrites — Sulphas calcicus;
rhombic. (prismaticus M.). D. = 3,5. P. = 3.
 11. Gypsum — Sulphas calcicus hydratus;
klinometric. (prismatoidic. M.) D. = 1—2. P. = 2,3.
Varr: lamellosum, fibros. granulos. densum, terreum.
 12. Aluminites — Hydrosulphas alumicus: 9. 3: 9;
rhombic? D. = 1. P. = 1,7.
 13. Alunites — Hydrosulphas potassalumicus: 8. 4; 2. 9;
rhomboedricus? D. = 5. P. = 2,6.
 14. Wawellites — Phosphas bialumicus hydratus.
rhombicus. — D = 4. P = 2,2 — 2,3.
 15. Lazulites — Phosphas bimagnesio-alumicus (hydratus?);
rhombicus. D. = 5—6. P. = 3.
 16. Calaites (Бирюза) — Hydrophosphas cupralumicus: 2. 1: 3.
D. = 6. P. = 5,8.
Distinctus ab Odontolitho occidentali.

17. Apatites — Phosphas sesquicalcicus (phthoratus. v. chloratus); hexagonalis (rhomboëdric. M.). D. = 5. P. = 3,15 — 3,25:
Varr. Moroxites, Asparagolithus, Phosphorites.
18. Fluor. — Phthoretum calcii: 47, 57 + 52, 43; tesseralis (octaëdricus M.). D. = 4. P. = 3,1.
19. Jitrocerites — Phthoretum calcii yttrio-cericum.
20. Kryolithus — Phthoretum sodalumii; rhombic? D. = 2,5—3. P. = 3.

SECTIO 2. HYDROLITA — IN AQUA SOLUBILIA.

A. Anhydrica:

1. Sal gemmae — Chloretum sodii: 60,3 + 39,7. tesseral. (hexaëdric M.). D. = 2. P. = 2,2 — 2,3.
2. Sal ammoniacum — Murias ammoniae; tesserale (octaëdricum M.).
Vulcanic. et pseudovulcanicum.
3. Nitras potassae.
Rhombic. (prismatic. M.). D. = 2. P. = 1,95.
4. Nitras sodae.
Rhomboëdric. D. = 1,5—2. P. = 2,09.
5. Sulphas sodae calcicus (Glauberites); klinometric. (prismatic. M.) D. = 2,5—3. P. = 2,8.

B. Hydrata:

6. Sulphas sodae decahydricus — Sal Glauberi, klinometric. (prismatic. M.) D. = 1,5—2. P. = 1,5.
7. Sulphas magnesia heptahydricus — Sal amarum; rhombic. (prismatic. M.).
8. Sulphas potassalunicus sexhydricus (v. ammona-

- lunicus) — Alumen; tesseral. (octaëdric. M.) D. = 2—2,5. P. = 1,8.
9. Carbonas sodae decahydricus — Natron; klinometric. (hemiprismatic. M.) D. = 1—1,5. P. = 1,423.
 10. Sesquicarbonas sodae bihydricus — Trona; klinometric. — D. = 2,5—2,75. P. = 2,112.
 11. Boras sodae decahydricus — Tincal; klinometric. (prismatic. M.). D. = 2—2,5. P. = 1,5—1,7.
 12. Boras sexhydricus — Sassolin; rhombic? (prismatic. M.).

CLASSIS IV. PYROITA.

Mineralia combustibilia: Sulphur vel Carboneum liberum aut hydrio, oxygenio et nitrio nuptum, nec non particulis terreis ac metallicis inquinatum.

SECTIO 1. PYROITA MERE MINERALIA, PASSIM CRYSTALLISATA:

1. Mellithus — Mellitas alunicus 6-hydricus; tetragonalis. (pyramidal. M.) D. = 2—2,5. P. = 1,5—1,6.
2. Sulphur — Elementum chemicum; rhombicum (prismatic. M.). D. = 1,5—2,5. P. = 1,9—2,1.
Varr: crystallisatum, densum, farinaceum.
3. Adamas — Carboneum solidissimum; tesseralis — octaëdricus M. D. = 10. P. = 3,5 — 3,6.
4. Graphites (Plumbago) — Carboneum metalloideum (cum oxido ferri, titani, silicia, argilla); hexagonalis? (rhomboedricus M.) D. = 1—2. P. = 1,8—2,4.
5. Anthracites — Carboneum solidum terrosum — rhombicus? D. = 2—2,5. P. = 1,4 — 1,7.

SECTIO 2. PYROITA PHYTOGENA — NUNQUAM CRYSTALLISATA.

6. Lithantrax — Carboneum oxyhydrjicum. D. = 2—2,5. P. = 1,15—2. — An omnis phytogenus?
Varr: splendens, fibrosus, piceus, densus, fuliginosus.
7. Carbo fuscus — Carboneum hyperoxyhydriicum. D. = 1—2,5. P. = 1—1,4.
Varr: Lignum fossile s. Lignites; vulgaris, Gagates, terreus, chartaceus. — Turfa.
8. Petroleum — Subcarbetum hydriicum: 87 + 13. P. = 0,7 — 0,9.
Varr: Naphtha, Petroleum, Maltha.
9. Elaterites — Hyperoxycarbetum nitriohydriicum. P. = 0,9 — 1,23.
10. Asphaltum — Hyperoxycarbetum hydriicum. D. = 2. P. = 1,1 — 1,2.
11. Retinites — Resina cum substantia bituminosa peculiari. D. = 2 — 2,5. P. = 1,1 — 2.
12. Succinum — Oxycarbetum hydriicum: 6,73: 80,59: 7,31. D. = 2 — 2,5. P. = 1 — 1,1.
Varr. albens, flavum, rubrum.
13. Hatchetinus — Adipocera mineralis.



PETROMATOLOGIA SEU PALAEONTOGRAPHIA corpora organica petrificata percontat, eis systemata phytologicum et zoologicum applicando — inque petrefacta extintorum (incognitorum), dubiorum et superstitum subdividendo:

1. *Anthropolithi* — veri? et decipientes.
2. *Mastozoolithi: extintorum*: Anoplotheria, Palaeotheria, Lophiodontes, Megatheria, Megalonyces etc. *dubiorum*: Cervus giganteus, Ursus spelæus, Elephas pri-

migenitus, Rhinoceros ticheorrhinus etc.; *superstitum*: Tigris, Lupus, Vulpes, Mustela etc.

3. *Ornitholithi* — perpauci, in stratis cretæ formationi Parisiensi posterioribus inventi.

4. *Amphibiolithi* — *extinctorum*: varii Plesiosauri, Ichthyosauri, Megalosauri, Pterodactylus, Proteocordylus (Homo diluvii testis Scheuchzeri) etc.; — *dubiorum et superstitum*: Testudines, Tritones, Ranae, Serpentes etc.

5. *Ichthyolithi*: ægre determinandi, — Glossopetrae, Bufonites etc.

6. *Entomolithi* — Succino inclusi; — Trilobites etc.

7. *Helmintholithi*: varii Belemnites, Ammonites, Pentacrinites, Encrinites etc.

8. *Phytolithi*: Phyllites, Carpolithi, Dendrolithi — Acotyledonum et Monocotyledonum præcipue.

GEOGNOSIA, prae coeteris, quae globum terraqueum spectant, determinat varias formationes strati terrei externi, illas in 6 classes seu contignationes redigens:

Class. 1. *Primigenita*: Formationes gneusso-granitea, schisto-micacea, Phylladi et Quarzi.

Class. 2. *Transitiva*: Formationes Calcarei talcosi, Waccae griseae, granito-syenitea et Calcarei montani.

Class. 3. *Secundaria*: Formationes Lithanthracis, Porphyri, Calcarei rubentis, Trachytis, Calcarei alpini compacti, Arenacei variëgati, Calcarei conchiferi, Marnæ variëgatae et nigrae, Arenacei chloritei, Calcarei Iurae et Cretae.

Class. 4. *Tertiaria*: Formationes Argillæ plasticæ et Lignitis, Basalti?, Calcarei silicei s. grossi et Gypsi osteophori.

Class. 5. *Diluvium*, conchyliis et animalibus exoticis scatens: Sabulum et Argilla, Marna postpalæotherica, Sal gemmæ, Calcareus aquæ dulcis et conchifer Argilla ferrata pisiformis, arena, lutum et argilla; Saxa rotundata.

Class. 6. *Alluvium*, animalibus et conchis indigenis conspicuum: arenæ et argillae, calcareus lacustris et marinus, arenaceus silicosus corallifer, sales Sibiriae, turfa, minera lacustris; — producta Vulcanorum.

Geologus, observationibus geognosticis, palæonthographicis et hydrologicis innixus, theoriam *Geogeneseos* al-
ludit.

B. REGNUM ORGANICUM.

Amplectitur Vegetabilia, Phytozoa, Animalia et Ho-
minem.

1. PHYTOLOGIA SEU BOTANICA percontat Vegetabilia
s. Plantas, in 4 circulos subdividendas: *Sporophorarum*,
Pseudospermarum, *Coccophorarum* et *Spermophorarum*.

CIRCUL. I. SPOROPHORAE SEU ACOTYLEDONES.

CLASS. 1. BRYOIDEAE (CELLURARES.)

Ordo 1. *Hypoxyla*. — Receptacula solitaria v. aggre-
gata, stromati immersa, quandoque incrustata, tan-
dem hiantia, intus sporangiis farta; raro terrestria,
sæpius insectis v. truncis plantarum innata.

Genera: *Xyloma*, *Ectostroma*, *Pilidium*; *Phoma*,
Cytispora, *Phacidium*, *Rhytisma*, *Graphiola*; *Sphae-
ria*, *Lophium*, *Dothidea*; *Strigula*: *Dichaena* etc.

O. 2. **Lichenes.** — E thallo pulveraceo, crustaceo, frondoso, fruticuloso vel filamentoso exsurgunt apothecia sporis v. sporangiis farcta:

Graphis, Opegrapha; Variolaria, Verrucaria, Pyrenula, Lecidea, Chiodecton; Trypethelium; — Lecanora, Collema, Parmelia, Sticta; Solorina, Endocarpon, Peltidea; — Isidium, Roccella, Stereocaulon, Cladonia, Baeomyces; Evernia, Cetraria, Usnea etc.

O. 3. **Hepaticae.** — Thallo, in frondem foliaceam planam v. caulem foliosum evoluta, insident flores epiphylli v. axillares, monoici v. dioici. Sporangia foeminea 1—2—4—8 valvia, sporis elateribus adhaerentibus plena, absque operculo:

Riccia, Blasia; Salvinia, Azolla;? Targionia; Anthoceros, Marchantia; Jungermannia; Andreaea.

O. 4. **Musci.** — Surculus simplex v. ramosus; floribus hermaphroditis, monoicis aut dioicis, perichaetio donatis; thecis sporophoris operculatis, calyptratis, terminalibus v. axillaribus.

Helicophyllum Br.; — Fissidens, Drepanophyllum, Rhizogonium; — Sphagnum; — Phascum, Voitia; Gymnostomum; Schistidium, Grimmia, Cinclidotus, Tetraphis; Campylopus; Orthodon, Splachnum; Orthotrichum; Weissia, Octoblepharum; Dicranum; Trichostomum; Barbula, Encalypta; Cynodontium, Bryum, Cinclidium; Mnium; Bartramia; Funaria; Polytrichum, Buxbaumia; — Hypnum; Leskea; Neckera; Rhegmatodon; Cli-

macium; Pleuridium; Hookeria; Trachypodium, Fontinalis etc.

CLASS. II. PTERIDEAE (VASCULOSO-CELLULARES).

- O. 1. **Lycopodiaceae** — Surculus tracheis præditus, sporangia sessilia (mascula et foeminea?) ad axillas foliorum v. bractearum aut e sinibus foliorum producens:
Lycopodium, Tmesipteris, Psilotum.
- O. 2. **Filices.** — Caudex hypo — v. epigaeus, foliis tracheariis perfectis vestitus; soris sporangiorum e nervis foliorum oriundis, laminæ eorum innatis. Quibusdam folia, parenchymate perfecte orbata, in organa fructificationis evolvuntur:
Ophioglossum, Botrychium; — Schizaea, Aneimia; Osmunda; Gleichenia, Platysoma; Marattia; — Acrostichum, Hemionitis, Grammitis, Ceterach, Polypodium; Woodsia; Struthiopteris, Onoclea; Woodwardia, Blechnum; Scolopendrium, Asplenium; Lonchitis, Pteris; Lindsaya, Cheilanthes, Adiantum; Davallia; Aspidium; Cyathea; Trichomanes, Hymenophyllum.
- O. 3. **Equisetaceae.** — Caulis trachearius, et vaginatus v. verticillato-ramosus, producit amenta terminalia, e squamis peltatis, subtus sporangia hermaphrodita? gerentibus, constantia:
Equisetum.
- O. 4. **Marsileaceae.** — Folia passim petiolata, parvis tracheis prædita, ad basin petiolorum spor-

angia androgyna v. mascula et foeminea distincta gerentia:

Isoëtes, *Pilularia*, *Marsilea*.

CIRCUL. II. PSEUDOSPERMAE (Synorhizae ex parte).

Ultimos 4 ordines Sporophorarum repetunt, fabrica peculiari gaudent. An Floræ antediluvianæ reliquiae?

CLASSIS III. STROBILIFERAE.

Ordo 1. **Pineaceae** (= Lycopodiaceis). Truncus arboreus aut fruticosus, tracheis parcis v. vix praeditus, quibusdam verticillatus, phyllodiis aceròsis v. planis, passim fasciculatis, producit amenta declinìa: sporangia, nempe, mascula univalvia, quandoque concreta, et foeminea, quarum sporæ, in albumen conferruminatæ, jam embryonem paradoxum, di-v. pluricotyledoneum (ni plumula, cotyledonum vices gerens, sit), synorhizum RICHARDI, effingunt:

Belis, *Araucaria*; *Pinus*, *Larix*; — *Thuja*, *Cupressus*; — *Juniperus*, *Taxus*, *Podocarpus*; *Salisburia*; *Ephedra*; *Exocarpus*.

O. 2. **Zamiaceae** s. Cycadeae (Filices magis evolutæ). — Truncus minus perfectus, sed foliis passim compositis coronatus, quorum terminalia in bracteas antheri- v. ovariiferas transfigurantur; antheræ sporangia Lycopodiacearum æmulantur, ovariorum vero sporæ, in duas sibi contiguas co-

tyledones conferruminatae, plumulam foveant:

Cycas, Zamia, Arthrozamia.

- O. 3. **Casuarinaceae** (= Equisetaceis). — Arbores ramosissimæ, habitu Equisetacearum, spicis terminalibus, diclinibus: Mas: spica articulata, vaginata, verticillata; stamen 1, calyptratum, perigonio 4-tepalo? Foem: spica ovata, bracteata, ovarii uniovulatis, in strobilum samariferum abiens. Embryo inversus, exalbuminosus:

Casuarina.

CLASS. IV. RHIZANTHEAE.

- O. 1. **Patmaceae** (= Marsileaceis?). Parasiticae, bovistaeformes. Calyx 3 - 5 - fidus, quandoque petalifer, intus antheras globosas et grana numerosa fovens:

Rafflesia, Brugmansia, Gonyanthes, Aphyteja.

CIRCUL. III. COCCOPHORAE — sensu Agardhii (Monocotyledones!).

CLASS. V. NAJADEAE.

Aquaticæ, nudifloræ; spathaceæ, utriculosæ (raro capsulares), exalbuminosæ.

- O. 1. **Lemnaceae**. — E fissura phyllodii flores nudi, diandri; utriculus 1-spermus.

Lemna, Staurogeton.

- O. 2. **Ruppiaeeae**. — Hbæ aqu., caule nod. articulado, foliis altern. v. oppos. aut phyllodiis cum

vaginis intrapetiolaribus. Flores monoici (v. dioici), nudi, spathacci, monandri, quandoque congesti flores hermaphr. simulant; utriculi sine albumine:

Najas, Zannichellia: Phucagrostis, Zostera; Potamogeton, Ruppia.

- O. 3. **Ceratophyllaceae.** — Hbae phyllodiis verticillatis, florib. monoicis. Stam. 12—20, spathis circularibus cincta; nux 1-sperma, cotyledonibus 4 inæqualibus:

Ceratophyllum.

- O. 4. **Podostemaceae.** — Herbulae phyllodiis lobatis, florib. nudis, spathac. hermaphroditis. Ovaria 2—3 connata, capsula polysperma:

Podostemon, Marathrum, Lacis, Mniopsis.

CLASS. VI. AGROSTIDAE.

Glumaceæ, monospermæ, albuminosæ, embryone externo v. incluso.

- O. 1. **Cyperaceae.** — Culmus enodis; vaginae integræ, passim aphyllæ; glumae solitariae, stamini- v. ovariiferæ; setæ hypogynæ v. perigynium!; utriculus embryone externo in basi albuminis:

Kobresia; Carex; Scleria; Kyllingia; Cyperus, Schoenus, Cladium, Scirpus, Eriophorum, Fuirena.

- O. 2. **Gramina.** — Culmus nodosus, raro arborescens; vaginae fissæ; glumae 2 (1—3); Stamina 3—1—2—6—∞, et lodicula plurimis; caryo-

psis embryo externo. — *Zea* et *Lygeum* Typhaeis affini:

Rottboella, *Ophiurus*; *Lolium*; *Cenchrus*, *Ischaemum*, *Cynosurus*, *Elymus*; *Hordeum*; *Triticum*, *Aegilops*, *Secale*; *Chloris*, *Eleusine*, *Beckmannia*, *Cynodon*; *Paspalum*, *Sturmia*, *Digitaria*, *Lappago*; *Agrostis*, *Calamagrostis*, *Lagurus*, *Polypogon*; *Aristida*, *Stipa*; *Pennisetum*, *Panicum*, *Milium*, *Coix*; *Cornucopiae*, *Crypsis*, *Alopecurus*, *Phleum*, *Phalaris*; *Leersia*, *Oryza*; *Andropogon*, *Sorghum*, *Saccharum*; *Sesleria*, *Dactylis*, *Festuca*; *Melica*; *Koeleria*, *Glyceria*, *Poa*, *Briza*; *Avena*, *Bromus*, *Arundo*, *Anthoxanthum*, *Aira*, *Holcus*; *Ludolfia*, *Bambusa*; *Nardus*; *Lygeum*; *Zea*.

O. 3. **TYPHACEAE.** — Culmus teres v. trigonus, phyllodiis vaginantibus. Spadices dielines; glumæ 3, v. setæ hypogynæ; nucula, embryo incluso: *Typha*; *Sparganium*.

CLASS. VII. JUNCINAE.

Hbæ rhizomatosæ v. tuberosæ, quædam arborescentes v. cariciformes. Perigon. 6-merum (1—0), glumaceum v. calycino-corollaceum; stamina 6 (3—9); ovaria 3 connata, v. libera 3—6—∞; carpella 1-polysperma, per abortum solitaria; semina centralia v. parietalia, albuminosa, exclusis Alismaceis et Butomaceis.

O. 1. **RESTIACEAE.** — Flores perigoniati v. nudi, glumacei; carpella terna, monosperma, raro solitaria:

Desvauxia; *Restio*, *Willdenowia*; *Eriocaulon*.

- O. 2. **Juncaceae**. — Culmi quibusdam aphylli, perigon. 6-merum; capsula 3—v. 1 locularis, 3—∞ sperma, valvis medio septiferis; semina erecta, centralia, embryo incluso ad basin albuminis: *Juncus*, *Luzula*, *Xerotes*, *Kingia*; *Aphyllanthes*.
- O. 3. **Asteliaceae** (Xyrideæ). — Perigonium 6-merum, calycino-corollaceum. Capsula unilocularis, 3 valvis; semina marginali-parietalia: *Xyris*, *Astelia*; *Xanthorrhoea*?
- O. 4. **Commelinaceae**. — Caulis nodosus; phyllodia vaginantia, latiora; calyx et corolla distincta; ovarium 3-loculare; carpella 2—3, disperma! embryo trochlearis in cavitate dorsali v. laterali albuminis: *Commelina*, *Tradescantia*, *Pollia*, *Phyllidrum*, *Flagellaria*.
- O. 5. **Alismaceae**. — Phyllodia angusta v. lata; petiolus nec non calyx et corolla plus minusve distincta. Dieresilis e carpellis 3—6 v. indefinitis, 1—2 spermis; albumen o. *Triglochin*, *Scheuchzeria*; *Sagittaria*, *Alisma*, *Actinocarpus*, *Hydrogeton*.
- O. 6. **Butomaceae**. — Stamina 9—plura. Dieresilis follicularis; placentæ parietales ramosæ; albumen o. *Limnocharis*, *Hydrocleis*, *Butomus*.

CLASS. VIII. PALMAE.

- O. 1. **Palmae**. — Arbores foliis flabelliformibus v. pinnatisectis. Perigonium 3—6-merum, hypogynum; ovaria 3, interdum connata. Drupa 1—3;

albumen magnum, embryone laterali, basilari v. verticali:

Phoenix; — *Calamus*, *Sagus*; *Mauritia*; — *Manicaria*; *Elaeis*, *Bactris*, *Cocos*; *Elate*; — *Geonema*; *Areca*, *Seaforthia*; *Caryota*; — *Chamaedorea*, *Sabal*; — *Rhapis*, *Chamaerops*, *Corypha*; — *Latania*, *Borassus*.

CLASS. IX. SCITAMINAE.

Perigonium epigynum, irregulare; genitalia abortiva v. coalita. Amalthæa teicho — v. centro-sperma.

O. 1. **Neottiaceae.** (Orchideæ). — Perigonium 6-merum, orchideum; anthera 1 (2), in massas pollinicas divisa. Amalthæa 3-valvis, 1-ocularis, placentis parietalibus 3:

Malaxis, *Liparis*: *Epidendron*, *Bletia*; *Calanthe*, *Vanda*, *Angraecum*; *Orchis*, *Ophrys*, *Serapias*, *Habenaria*, *Gymnadenia*, *Platanthera*, *Hermidium*, *Satyrium*; *Epipogium*, *Vanilla*; *Arethusa*, *Limodorum*, *Epipactis*, *Corallorhiza*; *Listera*, *Neottia*, *Goodyera*; — *Cypripedium*.

O. 2. **Cannaceae.** — Culmus caulescens, radice tuberifera; petioli plus minusve vaginantes; calyx — et corolla staminibus abortivis aucta, irregularis; anthera 1, dimidiata. Amalthæa 3-locul., quibusd. baccata; Semina centralia ∞ — 3 — 1:

Canna, *Maranta*, *Thalia*, *Phrynium*, *Myrosma*.

O. 3. **Amomaceae.** — Differunt antherae loculis 2, disjunctis; seminibus et tuberibus passim aromaticis:

Hedychium, Kaempferia, Curcuma, Anomum, Zingiber, Costus, Elettaria, Alpinia, Renealmia, Globba.

O. 4. **Musaceae.** — Proceræ, subbulbosæ, racemis spathaceis. Stamen 1 (pistillo sterili), vel 5 (pistillo fertili), sterilia. Amalthæa baccata.

Heliconia, Strelitzia, Musa, Ravenala.

CLASS. X. CRINOIDEAE.

Hbæ bulbosæ v. tuberosæ, quædam arborescentes, phyllodiis angustis v. foliis perfectioribus; perigonio 6-mero, supero v. infero. Stam. 3—6—4—8. Ovaria 3—4 connata! fructus quibusdam baccatus.

A. ENSATAE. Epigynæ utplurimum; stamina 3—6.

O. 1. **Jxiaceae.** (Jrideae.) — Tubera v. bulbus; phyllodia ensata v. linearia; perigonium passim irregulare; stylus quibusdam petalomorphus; antheræ 3 extrorsæ:

Crocus, Galaxia, Antholyza, Gladiolus, Jxia., Sisyrinchium, Tigridia, Ferraria, Moraea, Iris. — *Burmannia?*

O. 2. **Brunswigiaceae.** (Amaryllideæ) — Bulbosæ utplurimum; perigonio plus minusve regulari et coronato quibusdam; Stamina 6, antheræ intro-sæ. Plures venenatæ:

Galanthus, Leucojum, Cyrtanthus, Sternbergia, Brunswigia, Amaryllis, Haemanthus, Crinum, Zephyranthus;—Eustephia, Narcissus, Pancratium.

O. 3. **Hypoxideae s. Compsoaceae.** — Hbæ pe-

rennes, pilosae! radice fibrosa, florib. solitar., spicatis v. paniculatis; perigonio persistente; seminum umbilicus lateralis rostelliformis:

Curculigo, Hypoxis, Compsoa.

- O. 4. **Haemodoraceae.** — Radix fibrosa; flores racemosi, perigonio regulari! Stamina 3—6, antheris introrsis; loculi fructus 1 spermi et abortivi:

Haemodorum, Dilatris, Anigosanthos, Barbacenia.

- O. 5. **Bromeliaceae.** — Caudex, phyllodiis coriaceis, spinescentibus! floribus spicatis v. racemosis, epi-v. hypogynis, perigonio diplomorpho, fructu baccato; semina comosa v. alata:

Bromelia, Pitcairnia, Agave?; — *Tillandsia, Guzmannia.*

- B. **LILIACEAE.** Hypogynae, v. perigynae, exceptis Tamaeis, et arborescentes ex parte. Stamina 6, 4—8.

- O. 6. **Pontederiaceae?** — Mediae inter Commelinaceas et Liliaceas:

Pontederia, Leptanthus, Heteranthera.

- O. 7. **Colchicaceae** (Melanthiaceae). — Tuberosae v. bulbosae, phyllodiis angustis v. dilatatis, vaginantibus; antherae extrorsae! styli distincti. Carpella 3 connata v. libera, follicularia:

Triglochin, Lilaea, Scheuchzeria; — *Tofieldia, Helonias, Androcymbium, Melanthium, Veratrum, Colchicum, Merendera, Bulbocodium.*

- O. 8. **Funkiaceae** s. Hemerocallideae. — Syntepalae, perigynae; radice fibrosa v. tuberosa.

Agapanthus, Veltheimia, Sansevieria, Alettris, Polyanthes, Hemerocallis, Czackia, Funkia; Tulbaghia, Gilliesia?

O. 9. **Tulipaceae.** — Bulbiferae! caule et foliis perfectioribus, tepalis liberis!

Fritillaria, Lilium, Tulipa; — Alstroemeria, Methonica, Erythronium, Uvularia?

O. 10. **Asphodelaceae.** — Bulbosae, tuberosae. v. stipitatae; semina testa crustacea nigra bulbosarum; fructus baccatus quorundam:

Allium, Eucomis, Scilla, Hyacinthus, Muscari, Albuca, Ornithogalum; — Narthecium, Anthericum, Chlorophytum, Asphodelus, Eremurus, Dianella, Cyanella; — Aloë, Gasteria, Apicra; Yucca, Dracaena, Phormium.

O. 11. **Convallariaceae s. Smilaceae.** — Caulis et folia magis evoluta, bulbo evanido. Flores passim dielines et monadelphi. Bacca 1—2—3—4 locularis:

Paris, Trillium, Medeola, Majanthemum, Convallaria; — Streptopus, Eustrephus, Ruscus, Asparagus, Smilax.

O. 12. **Tamaceae.** — Caulis volubilis! foliis reticulato-venosis et palmatisectis, floribus epigyn. dioicis. Amalthaea chartacea, 3-2-1-locularis; semin. marginata: *Tamus, Testudinaria, Rajania, Dioscorea.*

CLASS. XI. SPADICIFLORAE S. PEPEROIDEAE.

Perigonium o v. 6-merum; drupae v. baccae unilocu-

lares, raro capsula 3-locular. Embryo albumin., quibusd. subdicotyledoneus.

O. 1. **Cynomoriaceae**. — Caulis parasitic. nudus v. squamatus, florib. spicatis, unisexual. v. androgynis: mas: perigon. 3-partitum v. squama solitaria, stamin. 3 (1— ∞) connatis; foem: perigon. superum, 2—4 partit., ovario 1-ovulato. Achenium, embryo minimo, globoso. indiviso:

Helosis, Langsdorffia, Balanophora, Cynomorium.

O. 2. **Pandaneae**. — Arbores v. frut. phyllodiis linearibus, margine spinosis! Spadices dioici v. polygami, nudi. Drupae v. baccae 1— ∞ -spermae, saepius connatae.

Pandanus, Freycinetia; Phytelephas?

O. 3. **Callaceae**. (Aroideae). — Hbae rhizomatosae v. arborescentes, phyllodiis linearib. v. foliis cordatis, palmatis et pedatis. Spadix c. spatha: perigon. o v. 6-partitum; Bacca monosperma v. capsula 3—4-locularis:

Acorus, Orontium; — Dracontium, Pothos; Calladium, Calla, Arum, Arisarum, Cryptocoryne; — Ambrosinia, Pistia?

O. 4. **Piperaceae**. — Hbae, frutic. caulib. nodosis, fol. oppositis, verticillatis v. alternis, carnosis! Spadices nudi; stam. 2—3; ovar. 1, stigmatib. 1—3—4. Bacca monosperma, embryo saccato, parvo, subbilobo:

Piper, Peperomia.

O. 5. **Saururaceae**. — Hbae aquaticae, rhizomatosae, caulinae v. scapigerae, fol. alternis, integris

(v. radicalibus), reticulato-venosis, ochreatis. Spadices et flores nudi v. spathacei; stam. 3—6— ∞ ; ovaria 3—2—4. Dieresilis follicularis v. drupacea; embryo Piperacearum:

Aponogeton, Saururus, Houttuynia.

- O. 6. **Chloranthaceae.** — Frutic. ramis nodosis, foliis oppositis, penninerviis, denticulatis; florib. hermaphr. v. diclinib., spicatis v. conglomeratis, nudis v. bracteolatis; stam. 1—3; Drupa 3-gona, monosperma. Fragrantes:

Chloranthus, Hedyosmum, Gnetum?

CLASS. XII. HYGROBIAE S. NYMPHAEALES.

Disciscentes; — perigonio duplici (raro o), 3—6—5-mero et multiplicato instructae; albuminosae v. exalbuminosae.

- O. 1. **Vallisneriaceae.** (Hydrocharideae). — Hbae aquat. phyllodiis denticulatis v. fol. petiolatis, integerrim. nervoso-venosis; florib. spathaceis: mas: perigon. simpl. v. duplici, 3—6-fido, stamin. 3—6— ∞ ; faem: perig. super. duplex, 6-partit. Amalthaea baccata v. coriacea, 1—3—6-locularis: sem. ∞ , parietalia, exalbumin., monocotyledonea:

Udora, Vallisneria, Stratiotes, Hydrocharis.

- O. 2. **Trapaceae.** — Hbae natantes — differunt foliorum structura, florib. hermaphrod., nec spathaceis, numero quaternario, ovario 2-loculari, nuce 1-sperma, subdicotyledonea:

Trapa.

- O. 3. **Cabombaceae.** — Hbae aqu. caule repente,

foliis peltatis et capillaceis; florib. hermaphr. solitariis: sepala et petala 3 hypogyna; stam. 6—36; ovaria 2—18, cohaerent. v. distincta, 2-ovulata; carpella multiplicia, 1-2-sperma; embryo parvus in cavo albuminis basilari, saccatus — an dicotyledoneus?

Hydropeltis, Cabomba, Floerkea.

- O. 4. **Nymphaeaceae.** — Hbae aqu. caule rhizomatoideo, foliis basi incisus v. peltatis, pedunculis longissimis, unifloris: sepala 4 (5—6); torus ovaria 8—24 connata cingens, petali-et stamini-fer. Hesperidium multiloculare, stigmatibus connatis coronatum; semina ∞ parietalia, pendula, albuminosa; embryo parvus, basilis, saccatus, subdicotyledoneus?

Nuphar, Nymphaea, Euryale.

- O. 5. **Nelumbiaceae.** — Differunt toro obconico, truncato, foveolato; ovariis plurimis immersis; nucibus 1-2-spermis, exalbuminosis:

Nelumbium.

- O. 6. **Podophyllaceae.** — Hbae fol. lobatis. Sepala 3—4, decidua v. persist.; petala et stamina eodem numero bi-triserialia, alternantia; ovaria ∞ connata (2—1); sem ∞ v. solitaria, albuminosa, embryone parvo, basili:

Podophyllum, Jeffersonia, Achlys; Diphyllia? —

- O. 7. **Nepenthaceae.** — Folia ascidiifera; flores diclines: perigon. simplex, 4-partitum, stamina 16, monadelphae; capsula 4-valvis, seminib. costalibus, ∞ , scobiformibus:

Nepenthes.

- O. 8. **Sarraceniaceae.** — Folia ventricosa v. tubulosa. Involucrum 3-phyllum; calyx et corolla 5-mera, stamin. ∞ , hypogynis. Capsula 5-locularis, stigmate persistente, 5-gono, clypeiformi coronata:

Sarracenia.

CIRCULUS IV. SPERMOPHORAE (Dicotyledones).

A. SPERMOPHORAE APETALAE.

CLASS. XII. ASAROIDEAE.

Epigynae, albuminosae.

- O. 1. **Cytinaceae.** — Caulis parasit. carnos. nudus v. squamatus, florib. spicatis, diclinibus: perigon. 4—5—3-fidum, staminib. monadelphis totidem, duplis v. ∞ , — v. ovario 4—8-stigmeo. Amalthea integra, 4—8-valvis, semin. parietalib. ∞ , embryone axili, dicotyledoneo?

Apodanthes, Cytinus, Sarcophytum.

- O. 2. **Aristolochiaceae.** — Hbae v. frutic., saepe volubiles, fol. altern. integris, cordatis, pedatiner-
viis; florib. axillarib. hermaphroditis; perigon. ligulatum v. 3-partitum, staminib. monadelphis v. liberis 6—12— ∞ , ovario 6-loculari. Amalthea dehiscens, quandoque baccata, semin. ∞ , centralibus, embryone minuto, ante germinationem indiviso:

Aristolochia, Bragantia, Munnikia, Asarum, Tottea.

- O. 3. **Taccaceae.** Hbae grandes, radice tuberosa, scapigeræ, foliis pedato-pinnatifidis. v. integris; florib. umbellatis, involucratîs: perigon. 6-partit. persistens, passim irregulare; stamina 6, filamentis concavo fornicatis. Amalthaea 3-valvis, baccata, teichosperma:
Tacca, Ataccia.

CLASS. XIV. AMARANTHOIDEAE.

Hypogynae, albuminosae, curvembriae — ut plurimum.

- O 1. **Polygonaceae.** — Hbae, frut. arbores — caule articulato, nodoso, foliis altern. integris, passim ochreatis; florib. axillar. solitariis v. spicatis et paniculatis: perigon. 3—6-partitum, stamin. 3—6—9, ovario 2—3-stigmeo. Utriculus triquet, quibusdam nucamentaceus et 3-ocularis; embryo antitropus, curvatus, albumini appositus v. centralis:
Koenigia, Rumex, Emex, Oxyria, Rheum, Cocoloba, Atraphaxis, Polygonum, Fagopyrum, Calligonum.
- O. 2. **Amaranthaceae.** — Hbæ v. frut. caule angulato, subnodoso, fol. sparsis v. oppositis, integerrimis; florib. hermaphr. bracteat. glomeratis, spicatis v. paniculatis: perigonium scariosum persistens, segmentis 5—1—3; stam. hypogyna, opposita, isctepala v. pauciora, — c. parastemonibus; ovarium 1—∞ -ovulat., 2—4-stigmeum. Utriculus v. capsula ∞ -sperma unilocular., raro baccata; placenta basilaris, embryo amphitropus, radícula prope hilum:

Amaranthus, Aëra, Celosia, Gomphrena, Jresine, Alternanthera, Achyranthes, Desmochaeta.

- O. 3. **Chenopodiaceae.** — Hbæ, frut. caule angulato, subnodoso, fol. sparsis, quasi carnosis, incis; florib. parvis, hermaphr. v. diclinib., solitar. v. glomeratis: perigon. 5-partit.! herbaceum, fecundatione mutabile; stam. subperigyna, opposita, isotepala! ovulum 1; stigm. 2—4. Utriculus, raro baccatus, perigonio tectus, embryone amphitropo—v. cochleato-exalbuminoso, radícula ad hilum:

Salicornia, Anabasis, Salsola, Kochia, Polycnemum, Corispermum, Ceratocarpus, Diotis, Spinacia, Beta, Axyris, Atriplex, Blitum, Chenopodium, Anredera, Hablizia, Basella.

- O. 4. **Phytolaccaceae.** — Folia integerrima; flores hermaphr. bracteolati, racemosi, perigonio colorato, stamin. hypogynis! alternis! duplis v. indefinitis, ovariis 10—1. Dieresilis v. bacca solitaria: *Phytolacca, Rivina, Bosea?* — *Petiveria, Seguiera.*

CLASS. XV. LAUREALES.

Peri-hypogynae, exalbuminosæ, exclus. Santalaceis et Myristicaceis.

- O. 1. **Santalaceae.** — Suffrutic. frut. v. arbores, fol. sparsis, integerrimis; florib. parvis, hermaphr. v. diclin. racemosis, umbellat. v. solitariis: perigon. superum, 4—5—3-fid. persistens, novellum valvatum; stamina totidem v. dupla, opposita;

ovar. ovulis 2—4 pendulis. Achenium nucamentac. v. drupaceum; embryo axilis in albumine:

Thesium, Osyris, Fusanus, Santalum.

- O. 2. **Elaeagnaceae.** — Frutic. v. arbusculæ, interdum spinéscentes, fol. sparsis v. opposit. integerrimis; florib. axillarib. solitar. v. spicatis, hermaphr. v. dioicis: perigon. infer. 2—4-fidum, coriaceum; stam. perigyna, alterna, 4—8. Drupa, semine erecto exalbuminoso:

Elæagnus, Hippophae.

- O. 3. **Daphnaceae.** — Frutic. (hbæ), fol. sparsis v. opposit. integerrimis; florib. solitar. spicatis v. aggregat. et involucratis: perigon. 4—5-partitum, novellum imbricatum; stamin. isotepala v. dupla; ovul. 1, pendulum. Utricul. v. drupa; albumen ol.

Dirca, Lagetta, Daphne, Passerina, Stelleria, Struthiola, Lachnaea, Dais, Gnidia, Pimelea, Darwinia.

- O. 4. **Proteaceae.** — Frutic. arborescentes hemisphærii australis, fol. sempervirent. rigidis, verticillat. v. oppositis, simplic. v. profunde laciniatis, imo compositis; florib. hermaphr. v. diclinibus, subspicatis, corymbosis, bracteatis v. aggregatis et involucratis: perigon. inferum, sub⁴-tepalum, quandoque irregulare, stamin. epitepalis, raro liberis 4, cum glandulis v. squamis hypogynis alternantibus!; ovarium, quibusdam stipitatum, 1—2—∞-ovulatum, stylo simplici. Nux, samara v. drupa, raro 2-sperma, v. folliculus induratus, 2 — ∞

spermus; semina globosa v. compressa et alata, exalbuminosa:

Leucadendron, Isopogon, Protea, Persoonia, Brabejum; — *Hakea, Grevillea, Rhopala, Lomatia, Embbothrium, Dryandra, Banksia*.

- O. 5. **Perseaceae.** (Laurinæ). — Arbores, frut. (hbæ) fol. sparsis, opposit. verticillat. perennibus, integr. v. lobatis; infloresc. varia. Perigon. 6—4-fidum, novellum imbricatum, cum parastemonibus! et stamin. 6—9, perigynis; ovulo 1 (∞), pendulo. Bacca v. drupa, subinde calycis basi cincta, albumen o:

Laurus, Persea, Ocotea, Tetranthera; Cassyta?

- O. 6. **Myristicaceae.** — Arbores dioicae, perigon. infero, 3-fido, novello valvato; staminib. 3—12, connatis; ovulis solitariis, erectis. Bacca dehiscens, semine albuminoso, embryo parvo:

Myristica, Virola, Hernandia.

CLASS. XVI. ANOMALANTHAE.

(Euphorbiaceae, Urticeae et Amentaceae).

- O. 1. **Datisceae.** — Hbæ fol. sparsis, pinnatis, racemis axillarib. dioicis: mas: perigon. 5-sepalum, 10—15-andrum; foem: perigon. superum, 2-3-dentat. Amalthæa unilocular. 4—5-valvis, apice hians, seminib. marginalib. ∞ , albuminosis:

Datisca, Tetrameles.

- O. 2. **Euphorbiaceae.** — Hbæ, frut. arbores, saepe lactescentes, fol. integris v. palmatis, stipulatis — v. abortivis; florib. diclin. spicatis, racemos.

v. solitariis: perigon. 4—6—2-fidum, raro duplex v. o; stam. definit. v. indefinita; ovaria 3 (2— ∞), axi adnata, 1-2-ovulata. Dieresilis 3—2— ∞ -cocca; semina solitaria v. bina, pendula, albuminosa, cotyledon. foliaceis:

Pachysandra, Buxus; Phyllanthus, Xylophylla, Andrachne, Cluytia; Croton, Ricinus, Jatropha, Aleurites; Alchornea, Acalypha, Mercurialis; Sapium, Stillingia; Euphorbia.

- O. 3. **Monimiaceae.** — Arbores, frutic. fol. opposit. integris v. serratis, exstipulatis, aromaticis; flor. axillar. diclini! nudi, involucrati: Stamina et squamæ, involucro inserta, ut et ovaria, ovulo 1. pendulo v. erecto. Syconus drupifer, apertus; semina albuminosa:

Ambora, Monimia, Ruizia; Atherosperma, Citrosma.

- O. 4. **Artocarpaceae.** — Arbor. frutic. (hbæ) lactescentes, fol. simplic. v. lobatis, alternis! stipulis deciduis. Flores diclines Monimiacear. v. capitati et spicati: perigon. O. v. 3—4—2—5-fidum; stam. 2—5, opposita! ovaria sublibera, 1—2 ovulata, ovul. erectis. Syconus clausus v. patens v. Sorosus, (utriculis perigon. carnescente! inclusis); embryo curvatus:

Dorstenia, Ficus, Antiaris, Cecropia, Artocarpus, Broussonetia, Morus; Platanus?

- O. 5. **Urticaceae.** — Hbæ, frut. v. arbores! non lactescentes! fol. opposit. v. alternis. simp. v. compositis, stipulatis! florib. diclin.! amentaceis, race-

mosis v. capitatis et involucre: perigon. her-
bac. 4-3-5-2-partit. v. o; Stam. definita, opposita;
ovul. 1, erectum. in ovario libero, subdistylo.
Utriculus v. nucula (2-valvis); embryo vix albu-
minos. subantitropus:

*Boehmeria, Urtica, Forsköhlea, Parietaria, Bro-
simum; — Humulus, Cannabis.*

- O. 6. **Ulmaceae.** — Arbores v. frutic. fol. sparsis, in-
tegris v. serratis, stipul. caducis! florib. hermaphr.
v. polygamis, cymos, v. racemosis: perigon 5-4-fid.,
parastemonies! et stam. subperigyna; ovaria 2-3,
connata, 1-2-ovulata. Drupa v. samara 2-1-sper-
ma; sem. pendula, exalbumin.; embryo orthotro-
pus:

Celtis, Ulmus; — Tapura, Chailletia? —

- O. 7. **Myricaceae.** — Frut. v. arbusculæ, fol. spar-
sis, integris, serratis v. pinnatifidis; amentis dioi-
cis: stam. 2-4, libera v. monadelpha; ovar. 1-ovu-
lat. distigmeum, squamis 2-6 imbricatum! Nucula
v. drupa, sem. erecto, exalbumin., embryone an-
titropo:

Myrica, Nageja, Comptonia, Clarisia.

- O. 8. **Betulaceae.** — Arbores, frutic. fol. serratis;
amentis monoicis; squamæ decid. v. indurescen-
tes, basi 2-3-floræ; stam. 4-12; ovaria 2, connata.
Nuculae v. samaræ 2-1-spermæ, semin. pen-
dulis, exalbumin., embryone antitropo:

Betula, Alnus.

- O. 9. **Corylaceae.** — Arbores v. frut. fol. serrat. v.
pinnatifidis, stipulis caducis. Flor. masc. perigon.

o. v. 4—6-fido, stam. 4—24; fæm: amentac. bini, terni v. solitarii, involucrati, perigon. supero, vix notabili, ovario 2—6-locul., ovulis solitar. v. binis, pendulis. Nux monosperma! cupulata, embryo exalbum. orthotropus.

Carpinus, Ostrya, Corylus, Fagus, Castanea, Quercus.

O. 10. **Salicaceae.** — Frut. v. arbores dioicæ! Urceolus stamina 2-5-24, v. ovarium 2-stigmeum promens, squama stipatus! Capsula 2-valvis, 1-ocular. apice dehiscens, semin. ∞ , comosis, costalib. exalbuminosis:

Salix, Populus.

O. 11. **Juglandaceae.** — Arbores fol. spars. pinnatis, exstipulatis; flor. amentac. v. racemosis: mas: perigon. 2-5-6-partit., stam. 3-5-36; fæm: solitar. bini, pluresve, perigonio supero, 3-4-partito, quandoque duplici, ovario 2-valvi, 1-ovulato! v. 3-loculari. Drupa 1-sperma, coriacea, (subquadrilocularis). Albumen o; embryo antitropus:

Juglans, Carya, Decostea? Pistacia.

B. SPERMOPHORAE SYNPETALAE.

CLASS. XVII. SYNPETALE EPIGYNAE S. EPICOROLLEAE.

Classis naturalis, summam sui generis evolutionem in Cucurbitaceis absolvens.

O. 1. **Calyceraceae.** — Hbæ fol. sparsis, simplic., pinnatifidis; calyx et coroll. 5-fida; stam. 5, alter-

ma, monadelpha; ovul. 1; achenium coronatum, semine albuminoso; pendulo:

O. 2. **Synanthereae.** — Hbæ, frut. v. arbusculæ, fol. sparsis v. oppositis, simpl. pinnatifid. v. pinnatis! exstipulatis; florib. compositis; corolla 5-fida v. ligulata, antherae 5 connatæ; ovul. 1, stigma bifidum! Achenium pappiferum! sem. exalbuminoso, erecto:

1. *Ambrosia*, *Xanthium*; — *Echinops*, *Elephanthopus*; — *Jva*, *Parthenium*; — *Calendula*, *Osteospermum*, *Siegesbekia*, *Milleria*; — *Arctotis*; — *Rudbekia*; *Zinnia*, *Spilanthus*, *Helianthus*; *Georgina*, *Bidens*; *Helenium*, *Bellis*; *Aster*; *Baccharis*; *Solidago*; — *Othonna*, *Senecio*; *Arnica*; — *Inula*, *Gnaphalium*; — *Achillaea*, *Anthemis*, *Tanacetum*, *Artemisia*; — *Tagetes*.

2. *Tussilago*; *Adenostyles*; *Eupatorium*; *Vernonia*.

3. *Centaurea*; *Carduus*, *Arctium*; *Carthamus*, *Serratula*, *Xeranthemum*, *Carlina*; *Mutisia*, *Nassauvia*.

4. *Cichorium*, *Scorzonera*, *Leontodon*, *Tragopogon*; *Hieracium*; *Crepis*; *Hyoseris*, *Lapsana*; *Lactuca*, *Sonchus*.

O. 3. **Dipsaceae.** — Hbæ v. suffrut. fol. oppositis; florib. aggregatis; corolla subirregulari, 4-5-fida. Achenium pappiferum, passim involucreatum; embryo antitropus c. albumine:

Knautia, *Pterocephalus*, *Asterocephalus*, *Scabiosa*, *Dipsacus*.

O. 4. **Valerianaceae.** — Hbæ annuæ v. perennes, vix

frutesc., fol. oppositis, exstipulatis; flor. cymosis: corolla epig. 5-4-3-fida, quandoque calcarata; stam. alterna 4,3,2,1. Achenium. pappiferum! 1-2-3 locale, sem. 1. exalbuminos. pendulum:

Centranthus, Valeriana, Patrinia, Fedia, Valerianella.

- O. 5. **Rubiaceae.** — Hbæ, frut. v. arbores, fol. simplic. oppositis, bistipulatis, v. verticillatis, florib. cymosis: corolla epigyna! 4-5 (5-6-8)-fida, novella contorta v. valvata; ovar. 2- ∞ -1-loculare. Amalthæa 2- ∞ -locular., in baccam drupamve abiens; sem. erecta, solitaria, bina, plura in loculis, albuminosa:

Galium, Asperula, Scherardia, Crucianella, Rubia; Anthospermum, Phyllis; Spermacoce; Knoxia, Mitchella; Hedyotis; Rondeletia; Exostemma, Cinchona, Portlandia; Genipa, Gardenia; Guettarda; Chomelia; Coffea, Ixora, Chiococca, Psychotria; Cephaelis; Cephalanthus; Nauclea; — Opercularia.

- O. 6. **Caprifoliaceae.** — Frutices fol. oppositis, integr. v. pinnatis; florib. cymosis: corolla epig. 5-fida, quibusd irregularis; ovar. 3-4 locul., 3- ∞ -ovulat. Amalthæa baccata! 3-1-locular.; semina solitar. -2- ∞ , albuminosa, pendula:

Lonicera, Diervilla, Triosteum, Linnaea, — Viburnum, Sambucus.

- O. 7. **Vacciniaceae.** — Fruticuli fol. altern. coriaceis, simplic. Calyx integer v. 4-5-6-fidus, corolla epig. 4-5-partita, sæpe urceolata; stam. 8-10,

antheris bicornibus! *Amalthæa baccata*, 4-5-locularis, polysperma; semina axilia, albuminosa.

Ceratostemma, *Oxycoccus*, *Vaccinium*.

- O. 8. **Stylidiaceae**. — Hbæ v. suffrut. Nov. Holl! caule articulato, fol. sparsis v. cruciatis, florib. solit. v. racemosis: calyx et corolla 2-6-fida, irregularia! gynostemium diantherum, irritabile. *Amalthæa bivalvis*, subbilocularis, polysperma; embryo parvus in albumine:

Stylidium, *Leuwenhoekia*, *Forstera*.

- O. 9. **Lobeliaceae**. — Hbæ v. suffrut. lactescent. ! venenati! fol. sparsis, simplic., flor. racemosis: calyx persistens, corolla antice fissa, limbo 5-fido, irregulari; stamina coalita; styl. simpl. stigmatе piloso. *Amalthæa* 2-(1-3-4)-locular., apice dehiscent, semina ∞ , albuminosa:

Lobelia, *Isotoma*, *Clermontia*, *Lysipoma*, *Strumpfia*.

- O. 10. **Goodeniaceae**. — Frutices; differunt a præcedentibus corolla postice fissa, filamentis liberis, stigmatе bilobo, indusiato; fructu quandoque drupaceo et exalbuminoso!

Goodenia, *Euthales*, *Cyphia*, *Scacvola*.

- O. 11. **Campanulaceae**. — Hbæ s. frutic. flor. racemosis v. aggregatis. Calyx 5-4-8-fidus; corolla regularis! stam. libera! epigyna, stigma 3-5-fid. *Amalthæa* 2-3-5-valvis, semin. ∞ , axilibus, albuminosis:

Jasione, *Trachelium*, *Phyteuma*, *Lightfootia*,

Roëlla, Adenophora, Campanula, Prismaecarpus, Canarina, Michauxia.

- O. 12. **Cucurbitaceae.** — Hbæ gigantæ, vix frutescentes, scandentes, cirrhosæ, foliis sparsis, lobatis, florib. axillar., passim diclinib. Calyx 5-fidus, corolla 5-fida v. 5-petala; stamina passim 3-adelpha, antheræ biloculares, longissimæ, flexuosæ, liberae v. connatæ. Pepo 3-5-locularis, id e. amalthea baccata, valvis ad axin et parietem productis, seminib. ergo parietali-marginalibus, — exalbuminosus:

Lagenaria, Cucumis, Luffa, Bryonia, Sicyos, Momordica, Melothria, Cucurbita, Anguria, Feuillea.

CLASS. XVIII. SYNPETALAE HYPOGYNÆ — (Hypocorollæe.)

In Labiatis ac Verbenaceis evolvendis intentæ. Præeunt Monospermæ et Axispermæ Teicho — et Centrospermis; fructus vero partitur in Asclepiadeis, Boragineis et Labiatis.

- O. 1. **Allioniaceae.** (Nyctagineæ). — Hbæ aut frutic. caule nodoso, foliis oppositis! florib. solitariis v. aggregatis et involucratis. Calyx abortivus, in corollam continuatus; stam. 2—5, urceolo inserta; pistill. simplex 1, liberum. Nux e calyce adnato, embryone subamphitropo:

Nyctago, Oxybaphus, Allionia, Boerhaavia.

- O. 2. **Armeriaceae.** Hbæ v. suffrut. fol. radical. v. alternis, simplic.; flor. capitatis v. spicatis.; Calyx integer v. dentatus, corolla syn-v. pentapetala;

pistill. simplex, liberum, ovulo e funiculo longa pendulo; stigmat. 5. Utriculus, sem. albuminoso. *Plumbago, Vogelia, Statice, Armeria.*

O. 3. **Globulariaceae.** Hbæ, suffrut. — fol. altern. v. radicalibus, floribus aggregatis, involucratis, receptaculo paleaceo. Calyx 5-lobus; corolla irregulariter 5-fida; ovarium 1, ovulo pendulo, stylo 2-fido. Utriculus, calyce cinctus, sem. albuminoso: *Stilbe, Globularia.*

O. 4. **Psylliaceae.** Hbæ acaules v. suffrutic. florib. spicatis v. capitatis, bracteatis, raro monoicis. Calyx et corolla scariosa, 4-3-fida, utrumque persistens. Pyxidium, dissepimento simplici v. cruciato, seminifero, mobili instructum, 1-2-∞ spermum; embryo albuminosus: *Littorella, Plantago, Psyllium.*

O. 5. **Primulaceae.** Hbæ fol. oppositis! v. radicalibus, simplic. Calyx persist., 4-5-fid.; corolla hypog. regularis. Capsula 1-locular., placenta centrali libera, polysperma; sem. albuminosa: *Coris, Centunculus, Anagallis, Lysimachia, Trientalis, Hottonia, Primula, Androsace, Cortusa, Soldanella, Dodecatheon, Cyclamen.*

O. 6. **Pinguiculaceae.** Hbæ aquat. v. paludosæ, fol. radical. Corolla bilabiata, calcarata, diandra. Capsula Primulacear.; sem. exalbuminosa: *Pinguicula, Utricularia.*

O. 7. **Gentianaceae.** — Hbæ glabræ, fol. opposit. simpl., flor. cymos. axillarib.: Cal. persist. 5-fidus; corolla 4-5-fida, novella subcontorta. Capsula 2-

valvis, 1-2-locul., quandoque baccata; sem. albumin., parietalia v. centralia:

Villarsia, Menyanthes; — *Gentiana, Swertia, Chlora, Erythraea, Spigelia, Mitreola*.

- O. 8. **Stapeliaceae** (Asclepiadæ). — Frut. v. libæ, quædam scandentes et oppositifoliæ v. carnosæ — aphyllæ, flor. solitar., corymb. v. racemos. Cal. 5-partit. Corolla 5-fida; corona cucullata; stamina 5, inter se et cum gynostegio connata; quaque anthera in 2 massas pollinicas, connectivo longo junctas, discedente, massis duabus vicinarum antherarum contiguis et sacculis inclusis; omni hoc apparatu petalo-stamineo post fæcundationem deciduo, remanent folliculi 2, seminib. imbricatis, comosis, albuminosis. Lactescentes, — aeres!

Ceropegia, Stapelia, Hoya, Pergularia, Asclepias, Cynanchum; Periploca.

- O. 9. **Plumeriaceae** (Apocynæ). — Differunt a Stapeliac. corolla novella passim contorta, defectu coronæ, stamin. liberis, polline granuloso, folliculis, sæpe concretis in capsulam 2-1-ocular. v. baccam, seminibusque nudis!

Echites, Apocynum, Nerium, Vinca, Tabernaemontana, Plumeria, Allamanda; Carissa, Strychnos; Cerbera, Rauwolfia.

- O. 10. **Loganiaceae**. Placentæ solutæ columnares in fructu passim baccato, 4-loculari:

Logania, Goniostoma, Gerdneria, Usteria, Fagraea.

- O. 11. **Oleaceae**. — Arbores, v. frut. fol. oppositis!

simpl. v. compositis, flor. axillar. v. racemos. Calyx 4-5-8-fid. ut et corolla — novella contorta v. valvata, raro o., diandra; ovar. 2-locul., ovulis 2-4 pendulis v. erectis. Capsula v. bacca 2-1-locul., 2-4-sperma, semina albuminosa!

Jasminum, Nyctanthes; — *Olea, Phyllirea, Linociera, Chionanthus, Ligustrum, Syringa; Fraxinus.*

O. 12. **Styraceae.** Arb. v. frut. fol. altern. simplic., flor. axillar. Calyx et corolla (subperigyna) 3-4-5-7-18-fida; stam. 6—16, sæpe 1-adelpha; ovar. 3-5-10-loculare, loculis 1-2-ovulat. Capsula, bacca v. drupa 1-∞-locular. loculis 1-spermis, sæpe abortivis; sem. pendula v. erecta, albuminosa.

a). **Styraceae:** Cal. 4-5-fid. Corolla 8—10-fida, perigyna. Drupa 4-(3-5)-sperma, semin. 2-pendulis, 2 ascendentib.

Symplocos, Hopea, Styrax, Halesia.

b). **Ebenaceae:** Cal. et corolla hypogyna 3-6-fida. Drupa multilocularis, sem. paucis, pendulis.

Diospyros, Embryopteris, Royena, Maba.

c). **Sapoteae:** Cal. et corolla 4-8-fida. Drupa 5-10-locul., sem. erectis.

Achras, Chrysophyllum, Mimusops, Bassia, Sideroxylon.

O. 13. **Ardisiaceae.** Differ. a Styrac. florib. passim polygamis, corolla profunde partita, bacca v. drupa uniloculari, placenta centrali libera, oligo-v. 1-sperma.

Myrsine, Ardisia, Bladhia, Aegiceras; Embelia; Jacquinia, Theophrasta.

- O. 14. **Olacineae** s. **Ximeniaceae**. Arbor. v. frut. fol. simplic. alternis, flor. parvulis, axillarib. Calyx parvus, demum ampliatus v. baccatus, corolla 4-6-fida v. polypetala, stam. 3-10 c. parastemonibus, ovario 1, 3-4-stigmeo. Achenium drupaceum, sem. 1. pendulo, albuminoso; embryone parvo, basilari. *Olex, Spermaxyrum; Heisteria, Ximenia.*

- O. 15. **Ericaceae**. Hbæ, frutices, foliis altern. v. verticillat., sæpe persistent. et revolutis, flor. racemoso-corymbosis. Cal. persist. 5-3-4-partit., corolla vix perigyna, 4-5-fida, antheris basi bicornibus. Capsula loculi-v. septicida, v. bacca 4-5-locular., placentæ axiles, sem. albuminosa. *Diapensia, Blairia, Erica, Menziesia, Clethra; Chimaphila, Pyrola; Gaultheria, Andromeda, Ledum, Azalea, Rhodora, Rhododendron, Kalmia, Arbutus.*

- O. 16. **Stypheliaceae** (Epacrideæ). Frutic. N. H. differ. ab Ericaceis calyce colorato, antheris 1-locularib., capsula v. bacca 5-10-loculari. *Styphelia, Cyathodes; Epacris, Lysinema, Sprengelia, Richea.*

- O. 17. **Monotropaceae**. Hbæ carnosae, parasitic. squamigeræ, decolores. Calyx 5-partit, persist. v. o., corolla perigyna 4-5-partita, stam. 8—10, antheris peltatis. Capsula 5-locul. 5-valv. subbaccata, sem. numerosa, minutissima. *Monotropa.*

O. 18. **Phelipaeaceae**. Hbae luridae, carnosae, parasiticae! caule nudo v. squamoso, florib. terminal., solitar. spicatisve, bracteatis — Personatarum; capsula Gentianear., sem. albumin., embr. parvo, excentrico.

Orobanche, Phelipaea, Lathraea; — *Aeginetia*?

O. 19. **Gesneriaceae**. Hbae, frutic. fol. opposit., integris v. dentatis. Calyx superus v. inferus, corolla 5-loba, irregularis, stam. 4, didynama. Amalthea v. capsula 1-locularis, teichosperma:

Gesneria, Gloxinia; — *Besleria, Columnea, Achimenes, Ramondia*.

O. 20. **Scrophulariaceae**. Hbae, frutic. fol. opposit. v. alternis, flor. bracteatis, racemosis. Calyx et corolla hypogyna, bilabiata, 4-5-fida; stam 2 v. didynama. Capsula 2-locular.! raro baccata, centropolysperma; embryo axilis, albuminos., ortho - v. antitropus:

Verbascum, Celsia, Hemimeris, Scrophularia; Chelone, Digitalis, Linaria, Antirrhinum, Browallia, Cymbaria, Mimulus, Gratiola, Trevirania, Calceolaria; Paederota, Veronica, Disandra, Manulea, Erinus, Schizanthus; Buddlejia, Teedia; Euphrasia, Rhinanthus, Pedicularis, Melampyrum; — *Limosella, Brunsfelsia, Crescentia, Dardaria, Anthocercis*.

O. 21. **Solanaceae**. Hbae, frutic. arbores, fol. sparsis, integris, lobatis v. pinnatis, florib. regularibus! Calyx persist., 5-3-4-fid., corolla 5-4-fida, stamina alterna, raro connata. Capsula v. bacca 2-(3-4-5)

locular., centro-polysperma; semina album., embr. incluso, arcuato v. amphitropo:

Cestrum, *Lycium*, *Capsicum*, *Solanum*, *Physalis*, *Nicandra*, *Atropa*, *Solandra*, *Datura*, *Nicotiana*, *Hyoscyamus*; — *Nolana*.

- O. 22. **Sesamaceae**. Hbae fol. oppositis! integris, florib. axillarib. Corolla irregularis. Ovar. 2—4—8-loculare, (septis costalib et marginalib.). Capsula v. drupa, quibusdam muricata, 2—8-locular. Albumen o.

Martynia, *Sesamum*; *Josephinia*, *Pedalium*.

- O. 23. **Acanthaceae**. Hbae, frutices, fol. oppositis, vix lobatis. Calyx persist. 5-4-partit., saepe bracteatus. Corolla labiata, 5-loba, stam. 2 v. didynama. Capsula bivalvis, 2-locularis, septo costali scissili, processibus subulatis, semina exalbum. subtendentibus, poly-disperma:

Justicia, *Eranthemum*, *Ruellia*, *Acanthus*, *Thunbergia*, *Cyrtandra*?

- O. 24. **Bignoniaceae**. Arbor. v. frutic. scandentes, fol. oppositis, pinnatis! flor. magnis, racemosis! Corolla 4-5-loba, irregularis, 5-andra, ovario 2-(3-4) loculari. Capsula (siliquaeformis) semin. alatis, exalbuminosis.

Bignonia, *Catalpa*, *Jacaranda*, *Eccremocarpus*, *Incarvillea*, — *Cobaea*.

- O. 25. **Cuscutaceae**. Hbae parasit. aphyllae, volubiles, flor. fasciculatis, bracteatis. Calyx et corolla squamifera, 5-4-fida, persistentes. Capsula 2-locul.,

basi circumscissa, 4-2-sperma; embryo spiralis, acotyledoneus, albumine centrali.

Cuscuta.

O. 26. **Convolvulaceae**. — Hbæ, frutices, saepe volubiles et lactescentes, fol. alternis, integris v. palmatis et pinnatifidis, florib. axillar! solitar. v. ternis. Corolla plicata, 5-loba, novella contorta, 5-andra. Ovar. 2-4-loculare. Capsula 2-3-valvis, septo simplici v. 3-4-laminari, basi seminifero; sem. vix albuminosa, cotyl. foliaceis:

Convolvulus, *Ipomaea*, *Bonamia*, *Evolvulus*, *Falkia*, *Dichondra*; *Retzia*.

O. 27. **Hydroleaceae**. — Hbæ, interdum spinosæ, fol. sparsis, integris. Corolla rotata v. campanulata. Capsula 2-3-locularis (v. circumscissa), septis marginalibus, placenta centrali, seminib. minutis, albuminos., embr. recto.

Nama, *Hydrolea*, *Wigandia*.

O. 28. **Polemoniaceae**. — Hbæ, frutic. fol. alt. v. opposit., simpl. v. compositis, flor. paniculat. capitat. v. solitar. Calyx 5-3-4-fid. Capsula 3-locul. 3-valvis, septis costalib., c. axi 3-ptera novellis connatis, 3-∞-sperma; embryo rectus, albuminos.

Polemonium, *Phlox*, *Cantua*, *Loeselia*.

O. 29. **Hydrophyllaceae**. — Hbæ fol. alternis, pinnatifidis v. integris. Calyx 5-fid., corolla 5-andra c. parastemonibus. Capsula (vix baccata) 2-valvis, septis costalib.; sem. 2-∞, albuminosa, erecta.

Hydrophyllum, *Ellisia*, *Aldeaea*.

O. 30. **Onosmaceae** (Boraginæ). — Hbæ, frutic. v.

arbusculæ setosæ! fol. spars., simplic., flor. axill., solit. v. racemosis, secundis. Calyx 5-4-fidus, corolla quandoque irregularis et appendiculata. Ovaria 2—4, connata v. distincta, circum columellam elongatam v. depressam. Cænobium 4-nuculeum v. bigeminatum v. drupa 4—1—3-pyrena; embryo rectus, exalbuminosus.

Cordia, Ehretia, Messerschmidia, Tournefortia, Heliotropium; Cerinthe, Echium, Onosma, Lithospermum, Pulmonaria, Anchusa, Myosotis, Symphytum, Borago, Asperugo, Cynoglossum.

O. 31. **Nepetaceae** (Labiatae). — Hbæ aromaticæ! aut frutic. caule 4-gono, fol. oppositis, florib. axillaribus! cymosis, quasi verticillatis, spicatis v. solitar. oppositis, bracteatis! Calyx 5-fid. v. 2-labiatus, persist. Corolla labiata, 4-5-3-fida, stam. didynamia v. 2. Cænobium 4-nuculeum; albumen o!
Dracocephalum, Prasium, Prunella, Melissa, Thymus, Clinopodium, Ocimum, Plectranthus, Scutellaria; — Ajuga, Teucrium, Perilla, Lavandula, Sideritis, Origanum, Satureja, Hyssopus, Mentha. Lamium, Glechoma, Nepeta, Stachys, Leonurus, Betonica, Marrubium, Phlomis, Moluccella; — Lycopus, Ziziphora, Monarda, Colinsonia; Rosmarinus, Salvia; — Westringia.

O. 32. **Hebenstreitiaceae** (Selagineae). Fruticuli v. hbae capenses, ramis teretibus, fol. sparsis, infimis oppositis, integris, dentatis! flor. bracteatis, spicatis, paniculat. v. corymbos. Calyx persist. irregular., corolla 3-5-fida, stam. 4-2. Drupa sicca, 2-

sperma v. utriculus geminatus; sem. pendula, albuminosa.

Selago, Hebenstreitia, Dischimia, Agathelepis.

- O. 33. **Bontiaceae** (Myoporin.) Frutic. glandulosi fol. oppositis v. sparsis, integris, flor. axillar. solitar. ebracteatis. Calyx et corolla 5-fida; stam. 4-5. Drupa 2-4-locular., semin. pendulis, albuminosis.

Myoporum, Pholidia, Bontia.

- O. 34. **Verbenaceae**. Arbor. frut. hbae, caule juniore 4 gono, fol. oppositis v. verticillat., integris, lobatis v. compositis, subvaginantibus, flor. bracteatis. solitar. v. congestis. Cal. persist. 4-5-fid. Corolla 4-5-fida, subbilabiata; stam. 2-4, didynama! ovaria 4-2, connata, ovulis solitar. erectis. Drupa 4-2-1-sperma, putamine quandoque 4 partito; albumen o.

Clerodendron, Ovieda, Volkameria, Aegiphila, Premna, Vitex; Holmskioldia, Avicennia; Duranta, Citharexylon, Spielmannia, Verbena, Lippia, Lantana.

C. SPERMOPHORAE POLYPETALAE.

- CLASS. XIX. POLYPETALAE epi — et perigynae seu CALYCIPETALAE.

Summam sui typi evolutionem in Leguminosis, Pemaceis et Terebinthaceis absolvunt. Minus perfectae monospermæ, valvis tamen raro solitariis, sæpius polyteicho-v. centrospermis; fructus denudatus et multiple in Crassulaceis et Spiræaceis.

O. 1. **Umbelliferae.** Hbæ (giganteæ) s. suffrutic. caule culmiformi, foliis vaginantib! alternis, ut plurimum compositis v. abortivis, florib. passim umbellatis, quibusdam abortivis. Petala 5 (o), epigyna, alterna, staminib. opposita, quandoque inæqualia; ovaria 2 (1). Amalthæa 2-sperma, bipartibilis, passim costata et vittata, carpophoro setaceo instructa. Sem. pendula, albuminosa, embryo minutus ad apicem.

Hydrocotyle, Crantzia, Spananthe; Sanicula, Astringia, Eryngium, Bupleurum; — Pimpinella, Carum, Aegopodium, Ammi, Apium, Cicuta; Smyrnum, Conium, Cachrys, Lagoëcia; Meum, Seseli, Faeniculum, Aethusa, Oenanthe; Chaerophyllum, Scandix; Tordylium; Heracleum, Pastinaca, Anethum, Peucedanum, Ferula; Angelica, Levisticum; — Thapsia; Elaeoselinum; Caulis; Daucus; Cuminum; Siler, Coriandrum.

O. 2. **Araliaceae.** Differunt ab Umbell. passim arborescendo et scandendo, foliis minus compositis, petalis et stamin. interdum duplicatis, amalthæa baccata, 2-15-loculari, evittata, integra; embryo longo; inflorescentia sæpe paniculata.

Adoxa, Panax, Cussonia, Aralia, Hedera.

O. 3. **Loranthaceae.** Frutic. parasitici! fol. opposit! coriac. v. o, flor. hermaphr. v. diclinib. Petala 4-5-6-8, libera v. inferne connata; stam. isopetala, opposita. Achenium baccatum 1-sperm.; embryo albuminos. inversus.

Viscum, Loranthus.

O. 4. **Cornaceae**. Arbor. frutic. fol. oppositis! integris, flor. capitat, umbellat. v. corymbosis, 4-meris; stam. alterna. Amalthæa drupacea, 2-sperma, sem. pendulis, albuminosis.

Cornus, Aucuba.

O. 5. **Parrotiaceae** (Hamamelideæ). Frutic. fol. altern. simplicib., florib. axillar. subsessilib. fasciculatis, bracteatis! quibusdam diclinibus. Petala 4, perigyna, linearia, novella valvato-involuta v. o; stamina et parastemonies 4 (24). Amalthæa nuculis 2 seminudis, apice 2 fidis; semina pendula, albuminosa.

Hamamelis, Parrotia, Dicoryphe; — Fothergilla?

O. 6. **Bruniaceae**. Fruticuli africani, habitu Ericae v. Phylcae, florib. capitatis, fere Umbelliferarum, perigynis. Amalthæa 1—2-sperma; albumen tenuissimum; embryo inversus.

Brunia, Staavia, Linconia.

O. 7. **Rhamnaceae**. Arbor. frutices — fol. alternis! simplic., flor. parvis. Calyx 4-5-fid. junior valvatus; petala cucullata, perigyna, alterna v. o; stam. opposita; ovar. plus minusve liberum, 2-3-4-loculare. Bacca v. capsula 3-cocca, samaroidea; semina solitaria, erecta, albuminosa!

Paliurus, Zizyphus, Ventilago, Rhamnus, Hovenia, Ceanothus, Phylca, Gouania.

O. 8. **Stackhousiaceae**. Fruticuli N. H. fol. sparsis, minutis. simplic, flor. spicatis, terminalib. Calyx liber, tubo ventricosus, 5-fido; corolla synpetala

et stam. 5, perigyna; ovar. 3-5-locular., ovulis solitar. erectis. Carpella sicca, quandoque alata.

Stackhousia.

- O. 9. **Begoniaceae.** Hbae caule nodoso, fol. alternis, e typo palmato inaequilateris, stipulatis; flor. corymb. monoicis: mas: perigon duplex, petaloideum, 4-merum (*Circaeae*), monadelphum; facm: perig. superum, duplex, 5-6-merum, stylis 3. Amalthea 3-locul., 3-pterygia, centro-polysperma; embryo albumin. cylindricus.

Begonia.

- O. 10. **Combretaceae.** Arbor. frutic. fol. altern. v. oppos. simplicib., flor. spicatis, racemos. v. capitatis. Calyx adhaer. limbo deciduo; petal. o. v. 4-5, perigyna; stam. isopetala v. dupla, ovar. 1-loculare, ovulis 2-4-pendulis. Amalthea drupacea v. baccata, 1-sperma, alata! albumen o.

Bucida, Terminalia, Catappa, Conocarpus, Gyrocarpus; Combretum, Quisqualis.

- O. 11. **Rhizophoraceae.** Arbor. frut. fol. opposit. simplic, stipulis interpetiol., flor. axillar! Calyx adhaerens! 4-13-lobat.; petala isosepala, perigyna, stam. 2-pla, 3-plave, ovar. 2-locul., ovulis 4 — ∞ , pendulis. Amalthea 1-sperma, albumeno, radícula longa, cotyled. 2—8.

Rhizophora, Bruguiera, Olisbea; Cassipourea.

- O. 12. **Vochysiaceae.** Arbores Americ. ram. jun. 4-gonis, fol. oppositis! stipulatis, flor. racemosis, paniculat. Calyx adhaer! 4-5-fid. superne calcarat. Petal. 1,2,3,5, stam. 1—(5), perigyna, ovula 3.

v. 6. Capsula 3-locul., 3-valvis; sem. exalbumin. costalia? cotyledon. convolutae.

Callisthene, *Amphilochia*, *Vochysia*, *Qualea*.

- O. 13. **Haloragaceae**. Suffrut. v. hbae aquat., fol. alternis, v. opposit. verticill., flor. axillar. v. spicatis, interdum diclinib. Calycis limbus 4-3-partit. v. o. Petala epigyna v. o; stam. dupla, isosepala v. pauciora; ovaria 4-connata v. 1. Amalthæa 4-3-1-locular., quandoque partibilis; sem. solit. pendula, albuminosa.

Hippuris; *Callitriche*? — *Myriophyllum*, *Proserpinaca*, *Cercodia*, *Haloragis*, *Goniocarpus*, *Serpicula*.

- O. 14. **Epilobiaceae**. (Onagrariæ). Hbæ, frutic. fol. integris, v. dentatis, fl. racemosis. Calyx adhær.! 4-2-5-lobus, Petala totidem, raro o, novella contorta; stam. totid. v. 2-pla. Amalthæa capsularis, drupacea, v. baccata, 2-4-locular.; semin. pendula, axilia, exalbuminosa.

Circaea, *Lopezia*, *Jsnardia*, *Jussieuia*, *Vahlia*; — *Clarkia*, *Oenothera*, *Gaura*, *Epilobium*, *Fuchsia*; *Philadelphus*, *Decumaria*?

- O. 15. **Calycanthaceae**. Frutic. fol. opposit., scabris, flor. solitar. Perigonium coloratum, multifidum et multiseriatum; stamina perig. multiseriata; ovaria ∞ , 2-ovulata. Amalthæa carnosae, multiutricularis, semina ascendentia, exalbumin., cotyled. convolutæ.

Calycanthus, *Chimonanthus*.

- O. 16. **Punicaceae**. (Granatæ). Arbust. frutic. ra-

mis subtetragonis, fol. opposit. v. altern.; integris, eglandulosis, flor. 2-5, subterminalibus. Calyx 5-7-fid. coriaceus, petala 5-7, stam. ∞ . Amalthæa corticata, diaphragmate transverso in camera: superiorem 5—9-locularem, et inferiorem 3-locular. divisa; semina ∞ , exalbuminosa.

Punica.

- O. 17. **Memecylaceae.** Frutic. fol. opposit. integerrim., flor. axillarib. Calyx adhær. 4-5-lob. Petala perig. alterna, totidem, stam. 2-pla. Amalthæa 2-4-locular., oligosperma. Albumen o; cotyledon. convolutae.

Memecylon, Mouriria.

- O. 18. **Myrtaceae.** Arbores, frutic. fol. opposit.! integerrim., exstipulat., glanduloso-punctatis! Calyx 5-4-6-fidus; petala alterna, stam. indefinita; ovar. 2-3-4-5-10-valve. Amalthæa capsularis, dura v. baccata, 1— ∞ -sperma; semina varia, exalbuminosa.

Calythrix, Chamaelaucium; Beaufortia, Melaleuca, Eucalyptus, Metrosideros, Leptospermum, Fabricia, Baeckea; Sonneratia, Psidium, Myrtus, Syzygium, Caryophyllus; Barringtonia, Gustavia; — Lecythis?

- O. 19. **Melastomaceae.** Arbores, frutic. v. hbæ intertropicæ. fol. opposit. integris, 3-5-7-9 nerviis, reticulatis; florib. corymbos. paniculatis v. capitatis. Calyx et corolla Myrtacear! stamina 2-pla! antheris, novellis intra sinus calyceinos receptis. Amalthæa baccata, 2-3-6-8-locular. v. folliculi to-

tidem denudati; semina innumera, parva, exalbuminosa, varia.

Rhexia; *Osbeckia*, *Melastoma*; *Meriania*, *Lavosiera*, *Cambessedia*; *Rousseauxia*, *Blakea*; *Charianthus* etc.

O. 20. **Sesuvaceae** (Ficoideæ). Hbæ, frutic. fol. alternis v. opposit. carnosis. Calyx liber v. adhær.; petala 0 v. ∞ , perigyna, ut et stamina. Amalthæa v. capsula ∞ —5-follicularis, stellatim dehiscens; embryo subperiphericus v. spiralis, albuminosus: *Mesembryanthemum*, *Tetragonia*, *Aizoon*, *Sesuvium*, *Trianthema*, *Glinus*; — *Reaumuria*? *Nitraria*?

O. 21. **Crassulaceae**. Hbæ, frutic. fol. carnosis, florib. cymosis! secundis. Calyx 3-20-partitus; corolla poly-v. synpetala; stamina alterna (et opposita); ovaria isotepala, libera! Dieresilis follicularis; albumen tenue, embryo rectus.

Tillaea, *Septas*, *Crassula*, *Kalanchoë*, *Bryophytum*, *Cotyledon*, *Umbilicus*, *Sedum*, *Sempervivum*; *Diamorpha*, *Penthorum*.

O. 22. **Opuntiaceae** (Cactæ). Stirpes carnosæ, foliis hebetatis, angulatæ, aculeatae, Americanae, florib. solitar! Calyx adhær., sæpe imbricatus, petala et stamina 2— ∞ -serialia, confluentia; ovar. 1-ocular., placentis parietalib. multis v. centrali. Amalthæa baccata; semina ∞ , nidulantia, exalbumin., embryo...

Mamillaria, *Melocactus*, *Cactus*, *Opuntia*, *Pereskia*; — *Rhipsalis*.

O. 23. **Ribesiaceae** Frutic. inermes v. spinosi, fol. alternis, florib. racemos. bracteatis. Calyx adhær.; petala 4-5-0? et stamina alterna, epigyna!, ovar. 1-loculare, placenta laterali, stylo 2-3-4-fido. Amalthæa baccata. Albumen embryone minuto.

Ribes.

O. 24. **Escalloniaceae**. Frutic. fol. altern. simplicib., florib. 5-petalis, 5-andris, ovario semilibero. Baccæ v. capsula 2-valvis, 4-locular., sem. marginalibus.

Escallonia, Anopterus.

O. 25. **Loasaceae**. Hbæ Americanæ, urentes! fol. alternis v. opposit., simplic. lobatis, flor. solitariis. Calyx adhær. 5-4-partit.; petala quandoque dupla et stamina multiserialia, perigyna. Amalthæa 1-locular., 3-5-7-valvis; sem. parietalia, albuminosa.

Klaprothia, Mentzelia, Loasa, Blumenbachia, Gronovia?

O. 26. **Turneraceae**. Hbæ, suffrutic. Americae, pilosi, fol. altern. simplic., flor. axillar. Calyx liber, coloratus, 5-fid.; petala perigyna, novella contorta et stam. 5. Capsula 3-valvis, 1-locul., dentato dehiscent; semina costalia, albuminosa.

Turnera, Piriqueta.

O. 27. **Blackwelliaceae**. Arbusculæ tropicæ, fol. altern. simplicib., flor. racemos. paniculatis. Perigonium adhær! 10-30-fidum, lobis internis petaloideis; stamina 1-3-6-serialia fasciculata, interglandulas nectariferas 6-7 sita. Capsula seminuda, sub-

baccata, placentis parietal. 3-5, polyspermis; sem. parva, albuminosa?

Homalium, Blackwellia, Astranthus.

- O. 28. **Samydaceae.** Arbusculæ tropicæ, fol. altern. stipulatis, simplic., pellucido-punctatis, flor. axillaribus. Calyx persist. 5-3-7-partitus, intus petaloideus; stam. perigyna, 2-3-4-pla; ovar. simpl., liberum. Capsula 3-5-valvis, coriacea; sem. ∞ , costalia, albuminosa.

Samyda, Casearia, Athenæa.

- O. 29. **Saxifragaceae.** Hbæ sarmentaceae, fol. alternis! flor. racemosis. Calyx adhær. v. liber, 5-3-7-fid. persist.! petala perigyna v. o; stam. alterna (et opposita dupla). Capsula 2-3-valvis! semin. parietal. v. centralibus, albuminosis.

Chrysosplenium, Tiarella, Mitella, Tellima, Heuchera; — *Donatia, Astilbe, Bergenia, Saxifraga.*

- O. 30. **Cunoniaceae.** Frutic. fol. oppositis, simp. v. pinnatis, stipulis interpetiolarib., florib. Saxifragacear., fructu 2-3-loculari.

Callicoma, Cunonia, Weinmannia; Bauera; Hydrangea; Itea, Cyrilla.

- O. 31. **Tamaricaceae.** Frutic. ramis virgatis, foliis alternis, minutis! flor. conferto-racemosis. Calyx 4-5-partit, persist.; petala alterna, basi calycis inserta (corolla tubulosa Fouquierac.); stam. 1-adelpha! Capsula 3-gona, 3-valvis, placentis costalib. polyspermis; semina ascend. comosa, exalbuminosa?

Tamarix, Myricaria; — Fouquiera.

O. 32. **Portulacaceae.** Hbæ, frutic. fol. altern. v. oppos., simpl. Calyx liber! 2-3-5-fid.; petala 3-4-5-6-o. libera! Capsula 3-valvis v. utriculus circumscissus! placenta axilis, 1— ∞ -sperma; embryo periphericus, albuminos.

Portulaca, Anacampseros, Talinum, Calandrinia, Claytonia, Montia.

O. 33. **Paronychiaceae.** Hbæ v. suffrutic. ramosiss. fol. oppositis! verticillatis! stipulatis! Calyx 5-fid., petala (setacea! v. o.) et stamina perigyna; ovar. liberum, 2-3-stylum. Utriculus v. capsula axisperma; embryo periphericus.

Herniaria, Illecebrum, Paronychia, Pollichia; Löfflingia, Ortega, Polycarpon (Spergulae, Arenariae et Alsines stipulatae); Pharmaceum, Molugo; Corrighiola, Telephium.

O. 34. **Ammanniaceae.** (Lythrariae). Hbæ v. frutic. ramis 4-gonis! fol. oppositis! simplicib. exstipulat., flor. axillarib. v. racemosis. Calyx liber, 3-12-fid. petala fugacia! et stamina isopetala, 2-3-4-pla, perigyna; ovar. 2-4-loculare. Capsula in calyce 1-2-4-locular., placenta axili; semina ∞ , minuta, exalbuminosa.

Rotala, Suffrenia, Peplis, Ammannia, Lythrum, Cuphea, Lawsonia, Dodecas; Lagerstroemia, Lafoensia.

O. 35. **Leguminosae.** Arbores, frutic. hbæ, fol. alternis! stipulatis, compositis, cirrhosis! irritabilibus! v. simplic. (phyllodiis). Calyx 5-fid. irregularis! Petala 5-4-3-2-1, subperigyna, (corolla papi-

lionacea plurimis), raro connata v. o; stam. 10-5-15-20 v. pauciora, mon-2-3-adelpha v. libera; ovar. 1! excentricum. Legumen polymorphum 1- ∞ -spermum, lomentum (funiculis abortivis?) v. drupa. Albumen o.

a). **Papilionaceae**: *Trifolium*, *Lotus*, *Medicago*, *Trigonella*; *Genista*, *Cytisus*, *Ononis*, *Ulex*, *Aspalathus*, *Crotalaria*; *Sophora*, *Myrospermum*, *Baptisia*, *Pultenaea*; *Glycine*, *Indigofera*, *Psoralea*, *Clitoria*; *Abrus*, *Kennedya*, *Phaseolus*, *Dolichos*, *Lupinus*, *Erythrina*; *Vicia*, *Cicer*, *Pisum*, *Lathyrus*, *Orobus*; *Glycyrrhiza*, *Galega*, *Amorpha*, *Caragana Colutea*; *Astragalus*, *Biserrula*; *Coronilla*, *Ornithopus*, *Hippocrepis*; *Aeschynomene*, *Lourea*, *Hedysarum*, *Lespedeza*, *Alhagi*; *Dalbergia*, *Pterocarpus*, *Amerinum*.

b). **Cassieae**: *Arachis*, *Geoffroya*, *Dipterix*; *Ceratonia*, *Copaifera*; *Tamarindus*, *Bauhinia*, *Hymenaea*, *Cynometra*, *Cassia*, *Haematoxylum*, *Caesalpinia*, *Gleditschia*.

c). **Moringeae** (fructu 3-valvi, sem. costalib., embr. 3-cotyledon.): *Moringa*.

d). **Mimoseae**: *Swartzia*; *Mimosa*, *Adenanthera*, *Acacia*; *Detarium*.

O. 36. **Rosaceae**. Hbæ, frutic. arbor. fol. altern. stipulatis, simpl. v. composit. Calyx 5-4-3-fidus, liber v. adhær.; petala isosepala, perigyna, regularia! raro coalita v. o; stam. 4-5, multiserialia v. 1; ovar. 1-2- ∞ , inversa vel erecta. Analthæa utricularis. v. follicularis; dieresilis follicularis v.

syncarpium v. drupa, calyce deciduo v. reflexo;
sem. erecta v. inversa. Albumen o!

a). **Sanguisorbeae**: *Alchemilla*, *Sanguisorba*, *Poterium*, *Cliffortia*.

b). **Dryadeae**: *Dryas*, *Geum*, *Rubus*, *Fragaria*, *Potentilla*, *Sibbaldia*.

c). **Neuradeae**: *Neurada*, *Grielum*.

d). **Spiraeaceae**: *Purshia*, *Kerria*, *Spiraea*, *Gilenia*.

e). **Roseae**: *Rosa*.

f). **Pomaceae**: *Crataegus*, *Mespilus*, *Pyrus*, *Sorbus*, *Cydonia*.

g). **Amygdaleae**: *Amygdalus*, *Prunus*.

h). **Chrysobalaneae**: *Chrysobalanus*, *Acioa*.

O. 37. Terebinthaceae. Arbores, frutic. fol. altern. exstipul., composit. v. simplic., inflorescentia varia, paniculata! sexu vario. Calyx 3-5-partit., liber! petala o! vel alterna et coalita! stam. 4-5-10 e disco, ovaria 1-2-3-4-5, ovulis solitar. v. 2. Capsula v. drupa 1-5-locul.; albumen o.

Anacardium, *Semecarpus*; *Mangifera*; *Rhus*, *Schinus*; — *Spondias*; — *Boswellia*, *Balsamodendron*, *Bursera*, *Canarium*; — *Amyris*; — *Ptelea*, *Cnestorum*, *Spathelia*; — *Connarus*, *Cnestis*, *Brucea*, *Ailanthus*.

Ultimi 3 Ordines polymorphi an disjungendi?

CLASS. XX. POLYPETALAE HYPOGYNAE S. THALAMOPETALAE.

Summam sui typi evolutionem in Ranunculaceis et Magnoliaceis absolvunt; fructu generatim perfectiori, nec

nisi per abortum monospermo, gaudent; illeque perfectissimus in Ranunculaceis et Magnoliaceis esset, si anamorphosis albuminis absorptionem non retardaret.

O. 1. **Droseraceae.** Hbæ, foliis et pedunculis junioribus circinnatis! Sepala 5 persist., petala 5, quandoque coalita, stam. 5-10-15. Capsula 1-3-locul., 3-5-valv., placentis marginalibus; embryo axilis, albumin.

Drosera, Roridula, Dionaea, Aldrowanda, Parnassia.

O. 2. **Violaceae.** Hbæ, frutices, fol. altern! simplic. stipulatis, flor. solitar. v. racemosis, bracteatis. Sepala 5, inaequalia! interd. coalita, persist.; petala 5, passim inaequalia; stam. 5, antheris sæpe cohærentib., connectivo producto. Capsula 3-valvis, placentis costalib. v. marginalib., sem. albuminosis.

Viola, Noisettia, Glossarrhen, Jonidium, Hybanthus; Alsodeia, Conohoria, Spatellaria; — Sauvagesia.

O. 3. **Frankeniaceae.** Hbæ v. suffrutic. nani. Calyx 4-5-fid., petala unguiculata! appendiculata; stam. 5-7. Capsula in calyce 3-gona!, 1 locul., 2-3-4-valv, semin. marginalib. albuminosis.

Frankenia, Beatsonia.

O. 4. **Cistaceae.** Hbæ v. frutic. fol. altern! stipulat., flor. solit. v. racemos. Sepala 2 + 3 inaequalia; petala 5-3 fugacia, stam. indefinita. Capsula 3-5-

10-valvis, 1— ∞ -locular., sem. costalib. albuminos., embryo curvatus.

Cistus, Helianthemum, Lechea, Hudsonia.

- O. 5. **Bixaceae.** Arbor. frutic. fol. simplic. Sepala 4-7. petala 5 v. o. Bacca v. capsula 1-locul., semin. costalib. arillatis, albuminosis.

Bixa, Echinocarpus, Laetia, Prockia, Abatia.

- O. 6. **Flacourtiaceae.** Frutic. arbor. fol. simplic., differunt a Bixaceis flor. passim diclinib., apetalis, placentis parietalibus, areolatis.

Patrisia; Flacourtia, Roumea; Kiggelaria, Hyd-nocarpus; Erythrospermum.

- O. 7. **Papayaceae.** Arbores fol. palmatis, flor. diclinib. Perianthium infundibuliforme, 10-andrum; fœmin. duplex, 10-merum, ovario libero, 5-stigmeo, sub 5-loculari. Bacca 1-locularis, sem. parietalib? vix albuminosis, arillatis.

Carica.

- O. 8. **Passifloraceae.** Hbæ v. frutic. scandentes! cirrham! fol. simpl. palmatis, pinnatis, flor. solitar. v. racemos. Calyx 5-10-fidus, segment. internis petaloideis, v. petala 5 distincta; corona filosa e stamin. externis abortivis, an petalis?, stamina antherifera 5, monadelpha; ovar. stipitat. v. sessile, 3-stylum. Bacca. v. capsula 3-valvis, 1-locular., placentis costalibus, semin. albuminosis.

Smeathmannia, Paropsia; Vareca, Thompsonia, Tacsonia, Passiflora; — Malesherbia.

- O. 9. **Nandinaceae** (Berberidæ). Frutic. v. hbae, fol. simpl. v. compositis. Sepala 3-4-6, decidua;

petala et stamina opposita; antheræ a basi ad apicem valvatim dehiscentes; ovar. subobliquum, 1-loculare. Bacca v. capsula, placenta laterali, ima, 1-2-3-sperma, embryo albuminosus.

Berberis, Mahonia, Nandina, Epimedium; Lentonice.

O. 10. **Fumariaceae.** Hbæ foliis decompositis. Sepala 2, decidua; petala 4, heteromorpha; Stam. 6? diadelphæ. Capsula siliquosa v. utriculus baccatus; semin. albuminosa.

Dielytra, Adlumia, Cysticapnos, Corydalis, Fumaria.

O. 11. **Papaveraceae.** Hbæ, suffrut. succo lacteo, croceo v. rubro fæti, fol. alt., simpl. pinnatifidis. Sepala 2, decid. Petala 4-8-12-0; Stam. eod. numero ad 100. Capsula Fumariacear. v. multivalvis, ovata, placentis intervalvaribus; embryo minimus ad basin albuminis.

Hypocoum, Chelidonium, Glaucium, Bocconia, Sanguinaria, Argemone, Papaver; — Eschscholtzia.

O. 12. **Cruciferae.** Hbæ v. suffrutic. fol. altern. simpl. v. composit., flor. racemosis. Sepala 4, petala 4-0!; Stam. 6, tetradynama v. 4-2. Siliqua v. silicula, quandoque lomentacea, baccata v. drupacea, ∞—1-sperma. Albumen 0.

Lepidium, Thlaspi, Anastatica, Aethionema, Biscutella, Iberis, Vella, Cochlearia, Draba, Clypeola, Lunaria; — Sinapis, Brassica, Heliophila, Erysimum, Hesperis, Dentaria, Cardamine, Tur-

ritis, Nasturtium, Mathiola; — Bunias; Isatis; Cakile; Raphanus, Crambe; Chorispora.

- O. 13. **Cleomeaceae.** (Capparid.). Hbæ, frut. arbores, fol. simplic. (v. palmatis). Sepala 4, coalita, petal. 4, stam. perigyna! 4 v. multiserialia; ovar. pedicellatum! Siliqua v. bacca; sem. $\infty-1$, parietalia, exalbuminosa!.

Crataeva, Stephania, Capparis, Morisonia; Gynandropsis, Cleome, Physostemon.

- O. 14. **Resedaceae.** Hbæ, suffrut. fol. simpl. v. pinnatis, flor. racemos. Sepala 4-6-persist., petala inæqualia, multifida; stam. 10-24, subcoalita; ovar. substipitat. Capsula 5-6-valvis, dehiscens, placentis, costalibus; embryo curvatus, vix albuminosus.

Reseda, Ochradenus, Sesamella.

- O. 15. **Polygalaceae.** Hbæ v. suffrut. lactescentes, florib. racemos. v. axillarib. Sepala 3 + 2 inæqualia; petala 3-4 inæqualia, inter se et cum staminib. quibusdam connata; antherae 4 v. 8, 1-loculares; ovar. 2-loculare. Drupa v. capsula 2-1-locular., seminib. e septo pendulis, solitariis, vix albuminosis.

Polygala, Comesperma, Badiera, Muraltia, Bre-demeyera; — Securidaca, Krameria? Penaea?

- O. 16. **Tremandraceae.** Fruticuli N. H., fol. simplic., florib. solitar. axillarib. Sepala 4-5 inæqual! subcoalita, decidua; petala totid., novella involuta; stam. 8-10, antheris 2-4-locular., poro dehiscen-tib. Fructus Polygalacearum.

Tremandra, Tetratheca.

O. 17. **Caryophyllaceae.** Hbæ, suffrut. nodosi, foliis (phyllodiis) oppositis, integris, florib. terminalib. Calyx 5-10-dentat.; petala unguiculata 5, stam. 10, ovarium 2-5-stylum, substipitatum. Capsula 3-5-valvis, placenta axili, semin. ∞ albuminosis, embryo amphitropo.

Drypis, Velezia, Dianthus, Gypsophila, Saponaria, Lychnis, Agrostemma, Silene, Cucubalus.

O. 18. **Stellariaceae** (Alsineae). Differunt sepalis 4-5, vix coalitis, petalis bifidis! stamin. 10-8-6-4-3, ovario sessili.

Stellaria, Cerastium, Alsine, Spergula, Arenaria, Cherleria; — Möhringia, Sagina, Holosteum, Buffonia, Larbrea.

O. 19. **Elatinaceae.** Hbæ pygmaeae, fol. oppos. v. verticill. Calyx 3-4-5-partit., petala totid., stam. 3-4-5-6-8-10, styli 4-5. Capsula 4-5-locular., semin. ∞ cylindraceis, albumen o?

Elatine, Bergia.

O. 20. **Empetraceae.** Fruticuli ericoidei, foliis revolutis! verticillatis! florib. axillar. diclinis. Sepala, petala et stam. terna, ovarium 3-7-9-loculare, ovulis solitar. Bacca 3-9-pyrena, calyce persistente, semina albuminosa.

Empetrum, Corema, Ceratiola.

O. 21. **Linaceae.** Hbæ, suffrut. fol. altern. opposit. v. verticillat., florib. corymbosis. Calyx 3-4-5-partitus, petala inter se et cum stamin. cohærentia!

ovarium 3-5-loculare. Capsula 3-5-locular., semin. geminis, axilibus, exalbuminosis!

Linum, Radiola.

- O. 22. **Oxalaceae?** Hbæ, suffrutic. arbores, fol. alternis, opposit. v. verticillatis, compositis! irritabilibus! Calyx 5-partit. petala 5, subcohærentia, novella contorta; stam 10-5, submonadelpha. Capsula (bacca) 5-locular., axisperma, dehiscentia costali, semina plura in loculis, arillata, albuminosa.

Oxalis, Biophytum; — Averrhoa, Ledocarpon.

- O. 23. **Balsaminaceae.** Hbæ, foliis alt. v. oppositis, simplic., flor. axillarib. Sepala 2; petala 4, inæqualia, supremo cucullato, infimo calcarato; stam. 5, subsynanthera. Capsula 5-valvis, elastica, placenta centrali, semina ∞ , axilia, pendula, exalbuminosa.

Balsamina, Impatiens.

- O. 24. **Tropaeolaceae.** Hbæ Americanæ, volubiles! fol. altern. peltinerviis, flor. axillar. Calyx 5-partit. calcaratus, petala 5 perigyna, inæqualia; stam. 8 subperigyna! Utriculi 3 baccati, axi adnati; sem. exalbuminosa.

Tropaeolum, Magallana.

- O. 25. **Geraniaceae.** Hbæ v. frutic. fol. alternis! florib. solitar. v. umbellatis. Calyx persist. 5-partit. calcare pedunculo adnato! Petala 5-4-0, sæpe inæqualia, quandoque perigyna; stamina 2-pla 3-pla v. submonadelpha; quibusdam abortivis. Utriculi

5 rostrati, ex apice axis elongatae penduli, dissilientes. Albumen o.

Geranium, Erodium, Pelargonium; Monsonia.

- O. 26. **Leeaceae.** (Ampelideae). Frutic. erecti v. sarmentosi, scandentes, foliis altern. v. oppositis, simplic., lobatis v. pinnatis, cirrhis oppositifoliis, flor. parvis, racemosis, thyrsoideis. Calyx integer v. 4-5 dentatus; petala 4-5, interdum connata, stam. opposita, ovar. 2-5-loculare. Bacca 2-5-1-locularis, seminib. solitariis, axilibus, albuminosis, embryone recto v. curvato.

Cissus, Ampelopsis, Vitis; — Leea, Lasianthera.

- O. 27. **Menispermaceae.** Frutic. sarmentosi, fol. alternis, simpl. peltatis. v. palmatis, florib. dioicis, parvis. Perigonium 1-v. pluriseriale, tepalis ternis quaternisve, hypogynum; stamina opposita, isopetala v. 2-pla 4-plave. Ovaria 3-6. 1. Drupæ 1-spermae! obliquae, solitariae! v. 6-loculares. Embryo curvatus, albuminosus?

Spirospermum, Cocculus, Wendlandia, Cissampelos, Menispermum; — Schizandra; Lardizabala.

- O. 28. **Pittosporaceae.** Frutic. v. arbores N. H. fol. integris, flor. solitar. v. congestis. Calyx decid. 5-partitus; petala et stamina alterna 5. Capsula v. bacca 2-5-locular. loculis incompletis; semina centralia, albuminosa.

Billardiera, Pittosporum, Bursaria.

- O. 29. **Celastraceae.** Arbores, frutic. fol. altern. v. opposit., simpl. v. compos.; stipulis deciduis. Calyx 4-5-6-partit., novellus imbricatus; petala 4-5-0;

stam. totid. alterna, subperigyna — vel 3, monadelphica; ovar. 2-3-4-loc., disco subcarnoso cinctum! ovulis erectis, loculis 1— ∞ -ovulatis. Bacca, capsula, drupa v. samara; semina albuminosa v. exalbuminosa, quibusdam arillata. An dividendus?

Hippocratea, Anthodon, Salacia, Johnia.

Cassine, Curtisia, Myginda, Jlex, Prinos; Sphaerocarya.

Evonymus, Celastrus, Maytenus, Polycardia, Elaeodendron, Ptelidium; Staphylea, Turpinia.

- O. 30. **Ternstroemiaceae.** Arbor. frutic. fol. alternis, exstipul. integris, coriaceis, flor. axillar. v. terminalib. Sepala 5-7, imbricata, concava; petala 5-6-9, libera v. subcoalita, e disco hypogyno; stamin ∞ . Bacca sicca 3-5-locular. v. capsula dehiscens, centrosperma; semina multa v. solitaria, albuminosa v. exalbuminosa.

Camellia, Thea; — Saurauja, Kielmeyera; Malachodendron, Gordonia; — Ternstroemia, Lettsonia, Freziera.

- O. 31. **Chlenaceae.** Arbusculae v. frutices Madagascarienses, fol. integris, stipulis decid., flor. paniculat. v. racemosis, involucretis. Sepala 3 parva, petala 5-6 subcoalita! stam. ∞ v. 10, monadelphia! ovar. 3-locul. Capsula 3-1-locular., semin. solitariis v. multis, centralibus, inversis, albuminosis.

Sarcouena, Leptolaena, Schizolaena, Rhodolaena; Hugonia.

- O. 32. **Elaeocarpaceae.** Frutic. v. arbor. fol. alt., simplic. Sepala 4-5, petala fimbriata; stam. 15-

20, antheris filiformi 4-gonis, apice poro dehiscen-
tibus; capsula v. drupa 1-5-locular., oligo-polys-
perma; albumen carnosum.

*Elaeocarpus, Aceratium, Vallea; Vateria, De-
candia.*

- O. 33. **Tiliaceae.** Arbores, frut. (hbæ) foliis stipulat.,
dentatis, flor. axillar. Sepala 4-5, novella valvata,
petala totidem v. 0; stam. indefinita v. definita;
ovaria 4-10 connata. Capsula ∞ -locularis, polysper-
ma, integra v. dehiscens; sem. erecta, albuminosa.
*Triumfetta, Sparmannia; Corchorus, Heliocarpus,
Grewia, Tilia, Sloanea, Muntingia; Vatica.*

- O. 34. **Sterculiaceae.** Arbores, frutic. fol. simpl. v.
palmatis, stipulis decid., flor. parvis, diclinis! ape-
talis. Perigon. 5-partit. decid.; torus stipitatus,
stam. submonadelpha, antherae extrorsae, stylus 1.
Dieresilis 3-5-follicularis; semina solitaria v. plura,
albuminosa.

Sterculia, Cheirostemon, Heritiera.

- O. 35. **Malvaceae.** Hbæ, frut. arbor. fol. simpl. v.
lobatis, flor. axill. solit. v. fasciculatis, racemosis!
Calyx 5-3-4-partit., novell. valvatus, sæpe bracteo-
latus; corolla malvacea, novella contorta; stam. 5
v. indefinita, antheris unilocularibus. Dieresilis
verticillata, carpellis 1-2-polyspermis v. capsu-
la v. bacca; sem. albuminosa.

*Malope, Kitaibelia, Malva, Althuea, Lavatera,
Urena, Pavonia, Malvaviscus, Hibiscus, Senra;
Palavia, Anoda, Sida.*

- O. 36. **Bombaceae.** Arbores, frut. fol. simpl., palmat.

v. digitatis, — differunt staminib. pentadelphis, calyce novello subimbricato, fructu 5-10-valvi, varie dehiscente.

Gossypium, Fugosia, Lagunaea; Adansonia, Ceiba, Bombax, Carolinea, Helicteres, Chorisia, Myrodia, Durio, Ochroma.

O. 37. **Büttneriaceae.** Differunt a praecedent. antheris bilocularibus.

Theobroma, Abroma, Guazuma, Büttneria, Ayeenia; Lasiopetalum, Keraudrenia; — Melochia, Waltheria, Hermannia; — Ruizia, Pentapetes, Dombeya, Astrapaea; — Eriolaena, Wallichia.

O. 38. **Marcgraviaceae.** Frutic. tropici, foliis alt. simplic., flor. umbellatis! v. spicat., bracteatis! Sepala 2-7, imbricata! corolla synpetala, calyptrata, v. 5-petala, stam. monadelpha! Capsula globosa ∞ -valvis; semina minutissima, numerosa in pulpa. *Marcgravia, Antholoma; Norantea, Ruyschia.*

O. 39. **Cambogiaceae (Guttiferae).** Arbor. v, frutices resinosi, foliis integris, oppositis! penninerviis, florib. sæpe diclinis, axillarib., racemosis. Sepala 2-6 persist.! inæqualia! petala 4-10; stam. indefinita! monadelpha! Hesperidium? siccum v. pulposum, 1— ∞ -loculare; sem. solitaria v. ∞ , axilia, exalbuminosa, cotyledones quorundam connatae. *Garcinia, Tovomita, Micranthera; Clusia, Havetia; Mammea, Calophyllum, Mesua, Stalagmitis, Rheedia; Chrysopia.*

O. 40. **Hypericaceae.** Hbæ, frut. arbor. resinosa! fol. opposit! integris, pellucido-v. nigro-vesiculo-

sis, florib. paniculatis! Sepala 4-5 subconnata; stamina indefinita, 1- ∞ -adelpa. Capsula v. bacca 3-5-locularis, placenta axili, angulata, polysperma; albumen o.

Aristotelia; *Carpodontos*; *Androsaemum*, *Sarothra*, *Hypericum*, *Ascyrum*.

- O. 41. **Aurantiaceae.** Arbores, frutic. glandulis vesiculososis abundantes, foliis altern., articulatis, simplic. v. pinnatis. Sepala et petala 3-5 subcoalita; stamina totid. 2-pla multiplave, 1- ∞ -adelpa. Hesperidium 1- ∞ -loculare, semin. ∞ v. solitariis, exalbuminosis, pendulis.

Atalantia, *Limonia*, *Cookia*, *Murraya*, *Aegle*, *Citrus*.

- O. 42. **Coriariaceae.** Frutic. ramis subtetragonis et foliis oppositis, florib. dioicis! Perigonium 10-fidum, 10-andrum, ovaria 5 connata, stigmatib. elongatis. Dieresilis utricularis! semina pendula exalbuminosa.

Coriaria.

- O. 43. **Erythroxylaceae.** Frutic. arbores, stipulis axillarib., fol. altern. simplic., florib. parvis, bracteatis. Calyx 5-partit. petala 5, squamifera; stam. 10 monadelpha; ovar. 1 v. 3 connata. Drupa 1-sperma, embryo linearis, albuminosus.

Erythroxylum, *Sethia*.

- O. 44. **Malpighiaceae.** Frutic. arbusculae foliis opposit! stipulatis, simplic., flor. racemos. v. corymbosis. Calyx 5-partit., petala 5 unguiculata, inæqualia v. o; stam. 10! monadelpha! ovaria 3 con-

nata! Drupa 1-2-3-pyrena v. samaræ 3 connatae; semin. pendula, exalbuminosa.

Malpighia, *Bunchosia*, *Byrsonima*; *Banisteria*, *Hiptage*, *Triopteris*, *Tetrapteris*, *Thryallis*.

- O. 45. **Aceraceae.** Arbores fol. oppositis, simplic. v. compositis. Calyx 5-4-9-partit., petala totid. v. o circa discum hypogynum, stamina 8-5-12 gerentem. Samaræ 2-3!, semina solitar. v. 2 erecta, exalbuminosa.

Acer, *Negundo*.

- O. 46. **Paviaceae.** Arbores, frutic. fol. opposit., compositis. Calyx 5-lobus; petala 5-4, inæqualia, stam. 7-8, disco hypogyno inserta. Capsula junior 3-locul. 3-valv., ovulis geminis, costalibus; matura 2-3-valvis, 2-4-sperma; albumen o.

Aesculus, *Pavia*.

- O. 47. **Rhizobolaceae.** Arbores fol. opposit., digitatis, — differunt staminib. multis, monadelphis! ovariiis 4 connatis, 1-ovulatis, nucibus 4-1-3; radícula embryonis exalbuminosi maxima.

Caryocar.

- O. 48. **Melianthaceae.** Frutic. Capenses, fol. altern. pinnatis, eglandulosis, stipulatis, flor. racemosis. Calyx 5-fid., persist. inæqualis; petala 5, irregularia; stam. 4; ovaria 4 connata, 2-ovulata. Capsula 4-locularis, samaroidea; sem. solitar. albuminosa.

Melianthus.

- O. 49. **Sapindaceae.** Arbores, frutic. hbæ, scandentes, foliis alternis, compositis! flor. racemos.! Se-

pala 4-5; petala totid. v. o; stamina 2-pla! disco hypogyno inserta. Drupa v. capsula 3-2-1-locular.; semina solitar., exalbuminosa.

Cardiospermum, *Seriania*, *Paullinia*; *Sapindus*, *Blighia*, *Schmidelia*, *Euphoria*, *Cupania*, *Melicocca*; *Dodonaea*, *Amirola*, *Köelreuteria*, *Alectryon*.

- O. 50. **Meliaceae**. Arbores, frutic. fol. altern. simplic. v. compositis. Calyx 4-5-partit.; petala, quandoque connata, v. o; Stam. monadelpha 10-5-15-20. Bacca, drupa v. capsula 1-2-∞-locularis, valvis medio septiferis; albumen adest v. o.

Murraea, *Quivisia*, *Melia*, *Strigilia*, — *Canella*; *Trichilia*, *Ekebergia*, *Guarea*; *Aquilaria*, *Gyrinops*; — *Cedrela*, *Swietenia*, *Macharisia*, *Carapa*.

- O. 51. **Ochnaceae**. Arbores v. frutic tropici, foliis altern. simplic., stipulatis, flor. racem. v. solitar. diclinis!. Sepala 5; petala et Stam. 5-10; ovaria 5. Cænobium subdrupaceum; embryo rectus, albumen o:

Ochna, *Gomphia*, *Walkera*.

- O. 52. **Simarubaceae**. Arbor. v. frutic. Americani, lactescentes, fol. altern. pinnatis, exstipulatis. Calyx 4-5-partit.; petala 4-5; stamina isopetala v. 2-pla, disco hypogyno inserta. Dieresilis folliculis 4-5, monospermis; embryo inversus, albumen o:

Quassia, *Simaruba*, *Simaba*, *Raputia*.

- O. 53. **Rutaceae**. Hbæ perennes v. frutic. glandulosi, fol. altern. v. opposit., exstipulat, compositis!, flor. racemosi. Calyx 3-4-5-partit.; petala quorundam connata v. o; Stam. 2-3-pla v. isopetala; ovaria

3-5, libera v. connata. Capsula v. dieresilis, carpellis 1-2- ∞ -spermis; sem. albuminosa:

Ruta, *Peganum*, *Dictamnus*, *Jambolifera*?; *Diosma*, *Agathosma*, *Adenandra*; *Correa*, *Zieria*, *Boronia*, *Eriostemon*; *Pilocarpus*, *Esenbeckia*; *Ticorea*, *Galipea*; *Zanthoxylum*, *Toddalia*.

- O. 54. **Zygophyllaceae.** Hbæ, frut. arbores, fol. stipulatis, oppositis. Sepala et petala 5; stam. 10, alterna et opposita; ovar. 1-5-locul., stylis 5-1. Capsula 5-4-10-locular., superne dehiscens! semina ∞ v. solitaria, exalbuminosa!

Tribulus, *Ehrenbergia*; *Fagonia*, *Zygophyllum*, *Larrea*, *Guajacum*.

- O. 55. **Ranunculaceae.** Hbæ acres v. frutic. fol. quorundam oppositis, simplic. multifidis v. compositis. Perigonium simplex, corollaceum, v. 2-plex; tepala 3-5-6, parapetalis v. parastemonibus cucullatis aucta; petala isosepala, 2-3-plave, caduca; stam. indefinita, antheris extrorsis! Syncarpium utriculare v. dieresilis follicularis, raro fructus solitarius v. baccatus; semina albuminosa, embr. minimo.

Clematis, *Atragene*, *Naravelia*; *Ranunculus*, *Ficaria*, — *Myosurus*, *Ceratocephalus*, *Adonis*, *Hydrastis*, — *Anemone*, *Hepatica*; *Caltha*, *Trollius*, *Helleborus*, — *Thalictrum*, *Isopyrum*, *Coptis*, — *Nigella*, *Garidella*; *Aconitum*, *Delphinium*; — *Cimicifuga*, *Actaea*, *Paeonia*.

- O. 56. **Dilleniaceae.** Arbores, frutic., suffrutic. foliis alternis! integris, dentatis, florib. solitar. v. race-

mosis. Sepala 2 + 3; petala 5; stamina ∞ , antheris introrsis. Dieresilis 2-5-follicularis, semina (quorundam solitaria) albuminosa.

Tetracera, Delima, Curatella; Pleurandra, Candollea, Hibbertia, Wormia, Dillenia.

O. 57. **Magnoliaceae.** Arbores, frutic. fol. alternis, simplic., florib solitariis. Sepala 3-6; petala 3-27; stamina ∞ . Syncarpium folliculare, samariferum, v. baccatum; embryo parvus, albuminosus: *Illicium, Drymis; Mayna, Michelia, Magnolia, Liriodendron.*

O. 58. **Annonaceae.** Arbores, frutic. fol. alternis, integris. Calyx 3-4-fid.; petala 3-6; stam. ∞ . Folliculi, interdum baccati, solitarii, distincti v. coacti. Embryo minutus in albumine: *Annona, Kadsura; Unona, Uvaria, Asimina, Xylopia, Guatteria, — Anaxagorea.*



II. PHYTOZOA sectiones quatuor effingunt seu Classes: *Algarum, Fungorum, Polypariorum et Acalepharum.*

Classis 1. **ALGAE.** Cellulae globosae v. elongatae, solitariae, concatenatae v. in frondes teretes aut planas, vastissimas, parenchymatoso-prosenchymatosas, coacervatae, virides, olivaceas aut purpureas, cartilagineas, plus minusve articulatas, quibus innascuntur passim ampullae aëreae et conceptacula, sporas, mucō immersas, v. sporangia foventia. In Characeis sporangia diclinia. Motu oscillatorio continuo quaedam insignes.

O. 1. **Characeae.** *Chara.*

- O. 2. **Fucaceae:** *Sargassum*, *Cistoseira*, *Fucus*, *Furcellaria*; — *Himanthalia*, *Laminaria*; — *Dictyota*, *Zonaria*, *Haliseris*, *Dictyopteris*; — *Sporochneus*, *Cladostephus*, *Sphacelaria*.
- O. 3. **Florideae:** *Ceramium*, *Polysiphonia*, *Gigartina*; *Gelidium*, *Plocanium*, *Rhodomela*; *Halymenia*, *Delesseria*.
- O. 4. **Confervaceae:** *Ulva*, *Caulerpa*, *Scytosiphon*, *Hydrodictyon*; *Nostoc*, *Chaetophora*, *Cluzella*; — *Vaucheria*; — *Zygnema*; *Thorea*, *Lemanea*, *Batrachospermum*, *Draparnaldia*, *Conferva*, *Mesogloia*; *Leptomitus*, *Fragillaria*, *Diatoma*, *Lyngbya*, *Scytonema*, *Bangia*; *Frustulia*, *Oscillatoria*.

Classis II. FUNGI. Partes florum v. genitalium rudimentarias repræsentant, et quidem: *Mucedineae* filamenta tubulosa (podospermia) sterilia!, e cellulis concatenatis orta, quibusdam in sporangia mono- v. polysporea effiguratis; *Uredineae* ovula (sporida) stromati solido proprio v. superficiei plantarum inserta, intus sporulis farcta; *Lycoperdaceae* ovarium (peridium), e terra v. aliis vegetabilibus nascens, perigonio quandoque cinctum (perid. externum), sporas v. sporangia, capillitio immista, denum fovens et dehiscens. *Hymenomycetes* vero florem terreum, rudem sistunt, perigonio (volva) interdum præditum, in massam gelatinosam, carnosam, suberosam v. spongiosam, globosam v. deformem, stigma cupulæforme, stylum clavatum, vel stamen folii-v. coliforme (*Spathularia*, *Phallus*).

effiguratum, quibus adnatum hymenium sporas v. sporangia fovet.

- O. 1. **Mucedineae.** *Himantia*, *Byssus*, *Dematium*; *Antennaria*, *Cladosporium*; *Dactylium*, *Helicosporium*, *Chloridium*; *Sepedonium*, *Sporotrichum*, *Botrytis*; *Eurotium*, *Mucor*, *Stilbum*; *Erineum*.
- O. 2. **Uredineae.** *Aecidium*, *Puccinia*; *Bullaria*, *Nemaspora*; *Melanconium*, *Stilbospora*; *Sporidesmium*, *Podisoma*; *Tubercularia*, *Ceratium*, *Isaria*, *Cephalotrichum*.
- O. 3. **Lycoperdaceae.** *Illosporium*, *Xyloma*, *Sclerotium*, *Rhizoctonia*; *Tuber*, *Cyathus*, *Carpobolus*; *Lycogala*, *Trichia*, *Stemonites*; *Lycoperdon*, *Bovista*, *Geastrum*; — *Spumaria*, *Fuligo* etc.
- O. 4. **Hymenomycetes.** *Dacrymyces*, *Tremella*, *Exidia*; *Cenangium*, *Ascobolus*, *Peziza*; *Helvella*, *Morchella*; *Spathularia*, *Geoglossum*, *Clavaria*; *Telephora*, *Auricularia*; *Hydnum*, *Fistulina*; *Boletus*, *Polyporus*, *Daedalea*; *Merulius*, *Cantharellus*, *Agaricus*; — *Phallus*; *Clathrus*.

CLASS. III. POLYPARII. Cellulosa spongiosa, azotea, plus minusve calcaria farcta, membrana mucosa passim vestita, formam radiceis repentis, fungi, floris, trunci arborei v. folii præ se ferens, (hydrinis deficientes), adinstar plantarum successive increscens, producit ut plurimum lenticellas, gemmas, flores v. fructus animatos, qui eximia sensibilitate præditi, tubas Fallopianas fimbriatas (tentacula) vel uteros, ventriculi officio simul fungentes?, repræ-

sentare videntur, nervis et organis respiratoriis destituti, ovula ex ovariis excipiunt et eructant! Spongia, vix animata cum antecedentibus intermedia.

- O. 1. **Spongiaceae:** *Ephydatia* (Бадяга), *Spongia*, *Corallina*?
- O. 2. **Sertularini:** *Tubularia*, *Pennaria*, *Campanularia*, *Plumularia*, *Sertularia*.
- O. 3. **Alcyonellini:** *Flustra*, *Alcyonella*.
- O. 4. **Hydrini:** *Hydra*, *Coryne*.
- O. 5. **Lithodendra:** *Retepora*, *Truncularia*.
- O. 6. **Alcyonini:** *Alcyonium*, *Lobularia*.
- O. 7. **Pennatulini:** *Umbellaria*, *Renilla*, *Pennatula*, *Veretillum*.
- O. 8. **Corallini:** *Antipathes*? *Gorgonia*, *Jsis*, *Corallium*.
- O. 9. **Tubiporini:** *Cornularia*, *Tubipora*.
- O. 10. **Madreporini:** *Millepora*, *Pocillopora*, *Madrepore*; *Maeandrina*, *Astraea*, *Caryophyllia*, *Oculina*.
- O. 11. **Fungini:** *Fungia*.
- O. 12. **Zoanthini:** *Zoanthus*.
- O. 13. **Actinini:** *Actinia*.

CLASS. IV. ACALEPHAE. Phytozoa marina, libera, diaphana, deliquescentia, formam radicis (tubulosæ), disci plani v. convexi, zonæ aut vesicæ præseferentia, nervis destituta, sed vario apparatu natatorio insignia, processibus vel tubulis suctoriis sese nutrienda, imo quædam cavitate centrali, minore (cloaca an ventriculo vero?), vescam anima-

lem rudem suscipiente, prædita; phosphorescentia et quædam urentia (*Urticæ marinæ*). Ordines sec. Eschscholtz et Mertens.

SECTIO I ET II. SYPHONOPHORAE. (Velellinæ et Physophorinæ).

- O. 1. **Velellidae:** *Porpita*, *Velella*; — *Physalia*.
- O. 2. **Physophoridae:** *Stephanomia*, *Agalma*, *Rhizophysa*, *Hippopodius*, *Physophora*.
- O. 3. **Diphyidae:** *Cymba*, *Diphyes*, *Aglaisma*, *Eudoxia*.

SECTIO III. DISCOPHORAE. S. MEDUSINAE.

- O. 4. **Berenicidae:** *Berenice*, *Eudora*.
- O. 5. **Aequoridae:** *Eurybia*, *Cunina*, *Aegina*, *Aequorea*.
- O. 6. **Oceanidae:** *Phorcinia*, *Melicertum*, *Tima*, *Callirhoë*, *Oceania*.
- O. 7. **Geryonidae:** *Favonia*, *Lymnorea*, *Saphenia*, *Geryonia*.
- O. 8. **Medusidae:** *Chrysoara*, *Pelagia*, *Cyanea*, *Medusa*, *Sthenonia*.
- O. 9. **Rhizostomidae:** *Cephea*, *Rhizostoma*, *Cassiopea*.

SECTIO IV. CTENOPHORAE. S. BEROINAE.

- O. 10. **Beroidae:** *Pandora*, *Medea*; *Beroë*.
- O. 11. **Mnemiidae:** *Axiotima*, *Calymnia*, *Mnemia*, *Eucharis*.
- O. 12. **Callianiridae:** *Callianira*, *Cydlippe*, *Cestum*.



III. ANIMALIA in 3 sectiones: Gastero — Thoraco — et Cephalozoorum atque 12 classes discedunt.

SECT. 1. ANIMALIA MOLLIA S. GASTEROZOA.

Viscera abdominalia præ cæteris evoluta, nec non genitalia in plurimis; corpus nudum, vel testæ calcareae inclusum, ganglia nervorum, quibusdam simplicissimorum v. deficientium, dispersa; caput o v. rudimentarium, organa sensuum, præter oculos et tentacula, vix ulla; extremitates nullæ v. spurix.

CLASS. 1. INFUSORIA (POLYGASTRICA — EHRENBERGII).

Corpus gelatinosum, diaphanum, microscopicum, interdum viride, ore ciliato et passim tubo cibario, recto v. circulari, bursis (ventriculis), ad os radiantibus v. lateralibus, instructum; punctis rubris (oculis) in paucis conspicuis, nervis et organis respiratoriis indistinctis, per gemmas v. æquivoce sese propagans.

SECTIO 1. ANENTERA.

- a). **Gymnica:** *Monas*, *Uvella*, *Microglaena*, *Bodo*; — *Vibrio*, *Spirillum*; — *Astasia*, *Euglaena*; — *Cryptomonas*, *Pandorina*;
- b). **Setifera:** *Cyclidium*; — *Gonium*, *Volvox*.
- c). **Pseudopodii:** *Amoeba* (*Proteus*); — *Arcella*; — *Navicula*, *Bacillaria*, *Synedra*.

SECT. 2. ENTERODELA.

- a). **Anopisthia:** *Vorticella*, *Epistylis*; — *Ophrydium*.

b). **Enantiotreta:** *Enchelys*, *Actinophrys*; — *Collepina*.

c). **Allotreta:** *Trachelius*, *Loxodes*.

d). **Katotreta:** *Kolpoda*, *Paramaecium*.

CLASS. II. ENTOZOA: Animalia, intra alia animalia viventia, mollia, mucigena, decolora! musculosa, uncinata, sugentia, tubo cibario radiciformi vel intestinis veris praedita, sexualibus evolutis passim gaudentia, nervis, oculis et vasis in quibusdam conspicuis, organis respiratoriis nullis.

Ordo 1. Cystica: *Cercaria*? *Echinococius*, *Caenuurs*, *Cysticercus*.

O. 2. Cestoidea: *Ligula*, *Scolex*, *Caryophyllius*, *Triaenophorus*, *Botriocephalus*, *Taenia*.

O. 3. Trematoda: *Diplozoon*, *Polystoma*, *Diplostomum*, *Distoma*, *Amphistoma*, *Monostoma*.

O. 4. Acanthocephala: *Echinorrhynchus*.

O. 5. Nematoidea: *Strongylus*, *Ascaris*, *Oxyuris*, *Cucullanus*, *Trichocephalus*, *Filaria*.

CLASS. III. RADIATA (ECHINODERMATA): Corpus cavum, globosum, stellatum v. cylindricum, coriaceum v. crustosum, liberum, (raro stipitatum), pedicellis retractilibus, intestinis utrinque perviis v. sacco caeco, nec non arteriis ac venis cum dilatatione cordiformi, cui venae intestinales sanguinem decolorem adferunt, circulo nerveo pentagono et tentaculis praeditum. Aqua hausta, intestina alluens v. organou peculiare ramosum intrans, respirationem perficit, vel singularibus vasis suscepta, pedicellos, poris exserendos, turgescit; ovaria absque sexu masculino.

O. 1. **Crinoidea** — fixata! an Polyparia?:

Pentacrinus, Encrinus, Comatula.

O. 2. **Asteridae**: *Gorgonocephalus, Ophiura, Asterias.*

O. 3. **Echinidae**: *Scutella, Spatangus, Echinus.*

O. 4. **Holothuridae**: *Holothuria.*

CLASS. IV. MOLLUSCA. Animalia aquatica, libera vel demum fixata, ovi-v. vivipara, testae calcareae 1-2-v. multivalvi inclusa, quæ tamen nonnullis deficit v. rudimentaria est et e chlamyde secernitur. Organisatio interna perfecta, organa motoria vero et sensuality hebetata. Chlamys mucosa, intus musculosa, corpus laxè circumdans, in appendices varios, extremitatum vices gerentes, producitur, in Cirrhopodis vero pedicelli articulati; caput o vel rudimentarium et quidem oculis magnis et organis auditus in Gasteropodis conspicuum; ganglion principale nerveum supra oesophagum, et plura minora, filis intertexta; arteriæ et venæ, corde musculoso, sanguine cærulescente; vesiculæ vasculosæ (pulmones) v. branchiæ lamellosæ aut ramosæ respirationi inserviunt; hepar magnum, tubus cibarius perfectior, renes? et ovaria absque genitalibus masculinis, vel sexus androgynus et quibusdam distinctus.

SECTIO I. ACEPHALA.

ORDO I. TUNICATA.

Familia 1. **Thaliadae**: *Pyrosoma*? — *Salpa, Thalia.*

— 2. **Ascidiae**: *Botryllus; Polyclinum, Synoicum; Sigillina, Distomus, Dia-*

zona; Phallusia, Clavellina, Cynthia, Boltenia.

ORDO II. CONCHIFERA.

a). Tubicolae: *Clavagella, Aspergillum; Terebratulina, Pholas.*

b). Dimya.

Fam. 1. Pyloridæ: *Glycymeris; — Mya, Solen.*

— 2. Cardiacæ: *Venerupis, Cytherea, Venus; Mactra, Tellina, Donax; Pisidium, Cyclus; Lucina, Cardium.*

— 3. Chamacæ: *Isocardia, Hippopus, Tridacna, Chama.*

— 4. Mytilacæ: *Lithodomus, Modiola, Mytilus.*

— 5. Najades: *Unio, Anodonta.*

— 6. Arcacæ: *Nucula, Pectunculus, Arca.*

— 7. Aviculacæ: *Pinna, Meleagrina (margaritifera), Avicula.*

c). Monomya.

Fam. 8. Malleacæ: *Crenatula, Perna, Malleus, Vulsella.*

— 9. Pectinæ: *Lima, Pecten, Spondylus.*

— 10. Ostracæ: *Placuna, Anomia, Ostrea.*

ORDO III. BRACHIOPODA.

Orbicula, Crania; Thecidæ, Terebratulina, Lingula.

ORDO IV. CIRRHOPODA.

Fam. 1. Balanidæ: *Tubicinella, Coronula, Balanus.*

Fam. 2. Lepadina: *Otion*, *Pollicipes*, *Lepas*.

SECTIO II. CAPITUM PLUS MINUSVE EVOLUTO.

ORDO V. GASTEROPODA.

a). Cirrhubranchia? — *Dentalium*.

b). Tubulibranchia: — *Magilus*, *Siliquaria*, *Vermetus*.

c). Cyclobranchia: Familia 3. Patellina: *Chiton*; *Patella*.

d). Aspidobranchia:

Fam. 4. Patelloidea: *Fissurella*. *Emarginula*.

— 5. Haliotoidea: *Haliotis*.

e). Hypobranchia:

Fam. 6. Pleurobranchia: *Ancylus*, *Pleurobranchus*.

— 7. Phyllidiacea: *Phyllidia*.

f). Gymnobranchia:

Fam. 8. *Glaucus*, *Scyllaea*, *Thetis*, *Tritonia*, *Doris*.

g). Pomatobranchia:

Fam. 9. Acera: *Doridium*, *Bulla*, *Bulla*.

— 10. Aplysiacea: *Dolabella*, *Aplysia*.

h). Ctenobranchia (Pectinibranchia Cuvier):

Fam. 11. Capuloidea: *Calyptraea*, *Capulus*, *Crepidula*.

— 12. Sigaretina: *Sigaretus*, *Coriocella*.

— 13. Purpurifera: *Concholepas*, *Dolium*, *Harpa*, *Purpura*, *Buccinum*; *Cassis*; *Tritonium*, *Ranella*, *Murex*; *Pyrula*, *Pleurotoma*, *Fusus*, *Fasciolaria*, *Turbinella*, *Columbella*.

— 14. Cerithacea: *Cerithium*.

- 15. Alata: *Rostellaria*, *Pterocera*, *Strombus*.
- 16. Volutacea: *Mitra*, *Cymbium*, *Voluta*,
Marginella.
- 17. Involuta. *Ovula*, *Cypraea*, *Oliva*.
- 18. Conoidea: *Conus*.
- 19. Ampullariae: *Ceratodes*, *Ampullaria*.
- 20. Trochoidea: *Janthina*, *Natica*; *Turritella*, *Solarium*, *Rotella*, *Monodonta*,
Trochus, *Turbo*, *Littorina*, *Phasianella*;
Delphinula, *Scalaria*.
- 21. Neritacea: *Neritina*, *Nerita*, *Navicella*.
- 22. Potamophila: *Melanopsis*, *Rissoa*, *Melania*, *Paludina*, *Valvata*.

i). Pulmonata. (aa) aquatica.

Fam. 23. Operculata: *Helicina*, *Cyclostoma*.

- 24. Amphipneustea: *Onchidium*.
- 25. Limacea: *Physa*, *Lymnaeus*, *Planorbis*.

bb). terrestria:

Fam. 26. Auriculacea: *Scarabus*, *Auricula*.

- 27. Helicina: *Vertigo*, *Clausilia*, *Pupa*,
Achatina, *Bulinus*, *Helix*, *Succinea*,
Vitrina.
- 28. Limacina: *Testacella*; *Limax*; *Vaginulus*.

ORDO VI. HETEROPODA.

Fam. 1. Atlantidae: *Atlanta*.

- 2. Firolidae: *Pterotrachaea*, *Carinaria*.

ORDO VII. PTEROPODA.

Hyalaea; *Clio*.

ORDO VIII. CEPHALOPODA.

Fam. 1. Nautilacea: *Nautilus*, *Spirula*.

— 2. Loriginea: *Sepia*, *Onychoteutis*, *Loligo*.

— 3. Octopoda: *Argonauta*, *Heledone*, *Octopus*.

SECTIO II. ANIMALIA ARTICULATA S. THORACODIA.

Cutis passim indurata, transverse rugosa vel annulata, defectum sceleti interni resarcit. Pedes articulati (6-200) v. setiformes, raro o. Systema nerveum peculiare e gangliis pluribus biseriatis et filis concatenantibus, in inferiori media parte corporis locatis, — e quibus nervi motorii et viscerales, nec non ganglion principale, oesophago superpositum, nervos organorum sensualium colligens, prodeunt; oculi simplices, aggregati v. compositi fere omnibus, organa vero auditus et olfactus modo Crustaceis propria sunt; os maxillosum v. suctorium. Systema vasorum clausum v. ad vas dorsale simplex? reductum; branchiae, bursae pulmonales v. tracheae, undique sparsae, respirationem absolvunt; ovipara!.

CLASSIS V. ANNULATA. Vermes plus minusve annulati, hygrobi, ovi-v. vivipari, pedibus nullis v. tuberculoso-setaceis; capite plus minusve hebetato, tentaculato et oculato ut plurimum; ore sutorio v. maxilloso; tubo cibario appendiculato v. flexuoso et utrinque pervio, (paucis radiceformi — absque ano); genitalibus evolutis, androgynis in quoque individuo; arteriae quorundam pulsantes et venae lymphæ cruenta v. alba turgent, absque corde; cum aëre commercium ineunt tota superficie cu-

tis? vel vesiculis subcutaneis, quidam branchiis ramosis
v. bursis coacervatis respirant.

SECTIO I. ANARTHRA — lymphæ decoloræ.

ORDO I. ? ROTATORIA — Ehrenbergii.

Fam. 1. Polytrocha: *Salpina*, *Hydatina*.

— 2. Zygotrocha: *Brachionus*; *Rotifer*.

— 3. Schizotrocha: *Melicerta*, *Melagotrocha*.

— 4. Monotrocha:

ORDO II. TURBELLARIA — Ehrenbergii:

Fam. 1. Dendrocaela: *Typhloplana*, *Planaria*.

— 2. Turbellina: *Turbella*, *Derostoma*, *Gyrtatrix*, *Prostoma*.

— 3. Nemertina: *Notogymnus* Ehrenberg.,
Nemertes.

— 4. Gordiacea: *Gordius*, *Anguillula* Ehrenb.

SECTIO II. ARTHRODEA — lymphæ cruenta.

ORDO III. APODA.

Fam. 1. Hirudinea: *Clepsine*, *Helluo*, *Aulacostoma*, *Haemopsis*, *Hirudo*; *Piscicola*, *Pontobdella*.

— 2. Sipunculacea: *Priapul*, *Sipunculus*.

ORDO IV. CHAETOPODA.

a). Terricolae:

Fam. 1. Naidea: *Nais*, *Aeolosoma*.

— 2. Echiuridea: *Thalassema*; *Sternapsis*?

— 3. Lumbricina: *Tubifex*, *Lumbricus*.

Fam. 4. Cirrhipera: *Siphonostoma*, *Cirrhatulus*.

b). Tubicolae:

Fam. 5. Arenicolae: *Arenicola*.

— 6. Maldaniae: *Clymene*.

— 7. Amphitriteae: *Terebella*, *Amphitrite*,
Sabella, *Spirorbis*, *Serpula*.

c). Antennata (Dorsibranches Cuvier).

Fam. 8. Aricidae: *Cirrhonereis*; *Aronia*; *Aricia*.

— 9. Nereidae: *Nereis*.

— 10. Euniceae: *Eunice*.

— 11. Amphinomeae: *Amphinome*, *Chloëia*, *Pleione*, *Euphrosina*.

— 12. Aphroditeae: *Eumolpe*, *Hermione*, *Aphrodite*.

CLASSIS VI. ARACHNIDA. Animalia ovipara, aptera, cute tenera, raro incrustata, pluries renovanda, (quin vera metamorphosis insectorum prodeat); 8-raro 6-poda; antennis destituta. Caput et thorax, imo abdomen quibusdam non discreta; os mandibulis articulatis, cheliferis, maxillis palpiferis binis ac labio (inferiori) instructum. Cephalothoraci superne infiguntur vario ordine oculi 2-4-6-8-10-12, simplices. Abdomen pedicellatum, sessile v. connatum, raro annulatum, subtus spiraculis 2 aut pluribus insigne, per quae aër pulmones vesiculosos v. tracheas ramificatas intrat; vas dorsale simplex v. ramosum; sexus distinctus, ovaria magna. Quidam veneniferi.

SECTIO I. TRACHEARIAE.

ORDO I. ANATHROSOMA.

Fam. 1. Hydrachnidae: *Limnochares*, *Hydrachna*,
Eulais.

- 2. Microphthira: *Caris*; *Leptus*.
- 3. Acaridae: *Ixodes*; *Sarcoptes* (*exulcerans*), *Acarus* (*scabiei*), *Gammasus*; *Trombidium*; *Siro*.
- 4. Phalangita: *Phalangium*.

ORDO II. ARTHROSOMA.

- Fam. 1. Pycnogonidae: *Pycnogonum*, *Nymphon*.
- 2. Pseudoscorpia: *Solpuga*; — *Obisium*, *Chelifer*.

SECTIO II. PULMONARIAE.

ORDO III. ARANEAE.

- Fam. 1. Dipneumones: *Salticus*, *Lycosa* (*Tarantula*), *Dolomedes*; — *Thomisus*, *Micrommata*; *Epeira*; *Theridium*; *Argyronecta*; *Tegenaria*; *Clubiona*, *Segestria*.
- 2. Tetrapneumones: *Dysdera*, *Mygale*.

ORDO IV. ARTHROGASTRES.

- Fam. 1. Phrynidae: *Phrynos*, *Thelyphonus*.
- 2. Scorpionidae: *Androctonus*, *Centrurus*, *Buthus*, *Scorpio*.

CLASSIS VII. INSECTA. Corpus articulatum, ut plurimum 6-podum, (nonnullis pedes 14-200), capite, thorace et abdomine passim distinctis. Caput oculis 2 compositis, lateralibus, quibusdam ocellis (simplicibus) 3 mediis, antennis 2 et ore mordente — labro, labio, lingua, mento, mandibulis et maxillis binis, — rarius sutorio — instructum. Thoraci 3-annulari 3 paria pedum, coxa,

femore, tibia et tarso gaudentium, superne vero alae 2-4 plurimis infiguntur. Talis perfecta imago insecti apparet, postquam illud ex ovulo forma vermiculi evolutum, periodum larvae et nymphae seu chrysalidis (metamorphosin plus minusve completam) abegerit. Intra corpus continentur: fibrae musculares numerosae, vas dorsale simplex?, tracheae copiosae; extus stigmatibus hiantes; oesophagus, ventriculus, intestina, appendicibus biliferis et pancreaticis? ac corpore pingui aucta; ovaria maxima et uterus, vulva terminatus; — vel testiculi, vasa spermatica et vesiculae seminales, peni adnexa — nec non systema nerveum, generatim descriptum. Numerosissima.

ORDO I. APTERA.

a). Isopoda (Myriapoda):

Fam. 1. Julidae: *Julus*, *Polydesmus*.

— 2. Scolopendridae: *Scolopendra*.

b). Hexapoda.

aa). Metamorphosi nulla. α). Caudati:

Fam. 3. Lepismidae: *Lepisma*, *Machilis*.

— 4. Poduridae: *Podura*, *Smynturus*.

β). Ecaudati — parasitici:

Fam. 5. Nirmidae: *Philopterus*, *Trichodectes*, *Liotheum*.

— 6. Pediculidae: *Pediculus*.

bb). Metamorphosi subjecta:

Fam. 7. Pulicidae: *Pulex*.

ORDO II. DIPTERA.

Fam. 1. Hippoboscidae: *Melophagus*, *Ornithomyia*, *Hippobosca*.

- 2. Phoridae: *Phora*.
- 3. Muscidae: *Ochthera*, *Tetanocera*, *Sepe-*
don, *Trypeta*, *Sepsis*, *Scatophaga*, *Antho-*
myia, *Musca*, *Sarcophaga*, *Tachina*.
- 4. Oestridae: *Gastrus*, *Oestrus*.
- 5. Scenopinidae: *Scenopinus*.
- 6. Lonchopteridae: *Lonchoptera*.
- 7. Syrphidae: *Eristhalis*, *Sericomyia*, *Syr-*
phus, *Pipiza*, *Xylota*, *Chrysotoxum*, *Ceria*.
- 8. Dolichopidae: *Medetera*, *Dolichopus*,
Porphyrops.
- 9. Platypezidae: *Callomyia*, *Platypeza*.
- 10. Pipunculidae: *Pipunculus*.
- 11. Mydasidae: *Mydas*, *Thereva*.
- 12. Conopidae: *Myopa*, *Conops*.
- 13. Stomoxyidae: *Siphona*, *Stomoxys*.
- 14. Bombylidae: *Bombilius*.
- 15. Anthracidae: *Anthrax*, *Lomatia*.
- 16. Leptidae: *Leptis*.
- 17. Empidae: *Ramphomyia*, *Empis*, *Hilara*.
- 18. Tachydromidae: *Tachydromia*, *Hemero-*
dromia.
- 19. Hybotidae: *Hybos*.
- 20. Asilidae: *Asilus*, *Laphria*, *Dasypogon*,
Dioctria.
- 21. Acroceridae: *Henops*.
- 22. Stratiomyidae: *Pachygaster*, *Sargus*, *O-*
cycera, *Stratiomys*.
- 23. Tabanidae: *Haemotopoda*, *Chrysops*, *Ta-*
banus.

- 24. *Xylophagidae*: *Xylophagus*, *Beris*.
- 25. *Tipulidae*: *Rhyphus*, *Bibio*, *Dilophus*; *Simulia*; *Sciara*; *Mycetophila*, *Macrocera*, *Dixa*; *Trichocera*, *Tipula*, *Ctenophora*, *Limnobia*, *Erioptera*; *Psychoda*; *Cecidomyia*; *Ceratopogon*, *Tanypus*, *Corethra*.
- 26. *Culicidae*: *Anopheles*, *Culex*.

ORDO III. HYMENOPTERA.

- Fam. 1. *Apidae*: *Apis*, *Bombus*, *Saropoda*, *Eucera*, *Nomada*, *Anthidium*, *Caetioxys*, *Stelis*, *Chelostoma*, *Systropha*.
- 2. *Andrenidae*: *Hylaeus*, *Dasypoda*, *Andrena*, *Prosopis*.
 - 3. *Vespidae*: *Polistes*, *Vespa*.
 - 4. *Myrmicidae*: *Myrmica*, *Formica*.
 - 5. *Mutillidae*: *Mutilla*.
 - 6. *Scoliadae*: *Tiphia*, *Scolia*.
 - 7. *Pompilidae*: *Pompilus*.
 - 8. *Sphegidae*: *Sphegex*, *Ammophila*.
 - 9. *Bembecidae*: *Bembex*.
 - 10. *Crabronidae*: *Philanthus*, *Crabro*.
 - 11. *Jchneumonidae*: *Ophion*, *Pimpla*, *Metopius*, *Bassus*, *Tryphon*, *Jchneumon*.
 - 12. *Braconidae*: *Bracon*.
 - 13. *Chelonidae*: *Alysia*, *Chelona*, *Sigalphus*.
 - 14. *Proctotrupidae*: *Helorus*, *Sparasion*.
 - 15. *Cynipidae*: *Figites*, *Cynips*, *Ibalia*.
 - 16. *Diplolepidae*: *Chalcis*, *Diplolepis*.

- 17. Chrysididae: *Parnopes*, *Chrysis*, *Cleptes*.
- 18. Evaniadae: *Evania*, *Brachygaster*, *Fac-nus*.
- 19. Uroceridae: *Sirex*, *Xyphidria*.
- 20. Tenthredinidae: *Lyda*, *Lophyrus*, *Ten-thredo*, *Schizocera*, *Hylotoma*, *Cimbex*.

? ORDO IV. RHIIPTERA.

Stylops, *Xenos*.

ORDO V. LEPIDOPTERA.

A. Nocturna:

- Fam. 1. Pterophoridae: *Pterophorus*.
- 2. Tineidae: *Adela*, *Tinea*, *Yponomeuta*.
 - 3. Tortricidae: *Tortrix*.
 - 4. Pyralidae: *Pyrausta*, *Botys*, *Hermidia*.
 - 5. Geometridae: *Zerene*, *Fedonia*, *Acaena*, *Eunomus*.
 - 6. Noctuidae: *Plusia*, *Cucullia*, *Catocala*, *Triphaena*.
 - 7. Ceruridae: *Cerura*.
 - 8. Bombycidae: *Orgyia*; *Lithosia*, *Eupre-pia*, *Sericaria*; *Bombyx*, *Lasiocampa*, *Saturnia*.
 - 9. Hepiolidae: *Cossus*, *Hepiolus*.

B. Crepuscularia:

- 10. Zygaenidae: *Atychia*, *Zygaena*, *Sesia*.
- 11. Sphingidae: *Macroglossa*, *Sphinx*, *Sme-rinthus*.

C. Diurna:

- 12. Hesperidae: *Hesperia*.

- 13. Papilionidae. *Colias*, *Pieris*, *Dorites*,
Papilio, *Lycaena*, *Hipparchia*, *Apatura*,
Limenitis, *Vanessa*, *Argynnis*, *Melitaea*.

ORDO VI. NEUROPTERA.

- A. Fam. 1. Libellulidae: *Libellula*, *Aeschna*, *Agrion*.
— 2. Ephemeridae: *Ephemera*.
- B. Fam. 3. Myrmeleonidae: *Myrmeleon*, *Ascalaphus*.
— 4. Hemerobidae: *Hemerobius*, *Sialis*.
— 5. Panorpidae: *Panorpa*, *Boreus*.
— 6. Raphidiidae: *Raphidia*.
— 7. Termitidae: *Termes*.
— 8. Perlidae: *Perla*.
— 9. Psocidae: *Psocus*.
— 10. Phryganidae: *Phryganea*, *Mysticida*.

ORDO VII. ORTHOPTERA.

A. Cursoria.

- Fam. 1. Labiduridae: *Forficula*.
— 2. Blattidae: *Blatta*.
— 3. Mantidae: *Empusa*, *Mantis*, *Spectrum*,
Phasma, *Phyllium*.

B. Saltatoria:

- 4. Achetidae: *Gryllotalpa*, *Acheta*.
— 5. Locustidae: *Locusta*.
— 6. Gryllidae: *Pneumora*, *Truxalis*, *Acri-*
dium.

ORDO VIII. HEMIPTERA.

A. Homoptera.

- Fam. 1. Cicadidae: *Cicada*.

- 2. Cercopidae: *Cixius*, *Delphax*, *Fulgora*,
Centrotus, *Membracis*, *Cercopis*.
- 3. Psyllidae: *Psylla*, *Livia*, *Thrips*.
- 4. Aphididae: *Aphis*.
- 5. Coccidae: *Coccus*, *Dorthesia*.

B. Heteroptera — a) Geocorisae:

- Fam. 6. Pentatomidae: *Scutellera*, *Tetyra*; *Cyd-
nus*, *Cimex*, *Acanthosoma*, *Aelia*.
- 7. Coreidae: *Coreus*, *Corizus*, *Lygaeus*, *Geo-
coris*.
 - 8. Reduviidae: *Reduvius*, *Nabis*, *Pygolampis*.
 - 9. Phytocoridae: *Myris*, *Pyrrhocoris*.
 - 10. Acanthiidae: *Acanthia*, *Tingis*, *Aradus*.
 - 11. Hydrometridae: *Hydrometra*, *Eniesa*.

b). Hydrocorisae:

- 12. Nepidae: *Ranatra*, *Nepa*.
- 13. Naucoridae: *Naucoris*, *Notonecta*.

ORDO IX. COLEOPTERA:

A. Trimera.

- Fam. 1. Pselaphidae: *Claviger*, *Pselaphus*.
- 2. Coccinellidae: *Coccinella*.

B. Tetramera:

- Fam. 3. Chrysomelidae: *Chrysomela*, *Cryptocephalus*, *Clythra*, *Haltica*, *Galeruca*, *Cassida*, *Hispa*.

- Fam. 4. Crioceridae: *Lema*, *Donacia*.

- 5. Cerambycidae: *Saperda*, *Lamia*, *Clytus*,
Callidium, *Cerambyx*, *Prionus*, *Molor-
chus*, *Rhagium*, *Leptura*.

- 6. Cucujidae: *Cucujas*, *Brontes*.
- 7. Bostricidae: *Scolytus*, *Hylurgus*, *Apatc*.
- 8. Curculionidae: *Calandra*, *Hylobius*, *Thylacites*, *Brentus*, *Rhynchites*.
- 9. Bruchidae: *Anthribus*, *Bruchus*.

C. Heteromera :

- 10. Anisotomidae: *Anisotoma*, *Agathidium*.
- 11. Mordellidae: *Rhipiphorus*, *Mordella*.
- 12. Cistelidae: *Oedemera*, *Cistela*.
- 13. Pyrochroidae: *Melandrya*, *Pyrochroa*.
- 14. Tenebrionidae: *Blaps*, *Tenebrio*.
- 15. Meloidae: *Meloë*, *Lytta*.

D. Pentamera :

- 16. Cantharidae: *Lampyris*, *Lycus*, *Malachius*, *Cantharis*.
- 17. Tillidae: *Trichodes*, *Notoxus*, *Clerus*.
- 18. Ptinidae: *Ptinus*, *Anobium*, *Ptilinus*.
- 19. Buprestidae: *Trachys*, *Buprestis*.
- 20. Elateridae: *Elater*.
- 21. Dermestidae: *Byturus*, *Dermestes*.
- 22. Silphidae: *Necrophorus*, *Silpha*.
- 23. Nitidulidae: *Peltis*, *Nitidula*.
- 24. Byrrhidae: *Anthrenus*, *Byrrhus*.
- 25. Histeridae: *Hister*.
- 26. Lucanidae: *Sinodendron*, *Lucanus*.
- 27. Dynastidae: *Geotrupes*.
- 28. Melolonthidae: *Anisoplia*, *Melolontha*.
- 29. Cetoniidae: *Trichius*, *Cetonia*.
- 30. Scarabaeidae: *Onthophagus*, *Copris*; *Aphodius*, *Scarabaeus*.

- 31. Hydrophilidae: *Sphaeridium*, *Hydrophilus*,
Elophorus,
- 32. Heteroceridae: *Parnus*, *Heterocerus*.
- 33. Gyrinidae: *Gyrinus*.
- 34. Staphilinidae: *Oxytelus*; *Stenus*, *Paederus*, *Aleochara*; *Tachyporus*; *Omalium*;
Oxyporus, *Staphylinus*.
- 35. Dyticidae: *Dyticus*, *Noterus*, *Haliplus*.
- 36. Carabidae: *Bembidium*, *Tachypus*, *Nebria*; *Carabus*, *Procrustes*, *Cychrus*; *Harpalus*, *Amara*, *Agonum*, *Loricera*, *Cephalotes*; *Clivina*, *Scarites*; *Dromius*, *Lebia*, *Brachinus*.
- 37. Cicindelidae: *Cicindela*.

CLASSIS VIII. CRUSTACEA. Animalia aptera, aquatica v. amphibia, ovipara, misroscopica v. maxima, organisatione interna hebetata v. hujus ordinis perfectissima, omnia pedata, saltem juniora, branchiis fimbriatis v. vesiculosus respirantia. Thorax præ cæteris eminet, capite accreto!, abdomine plus minusve hebetato, caudam mentiente. Cephalothoraci antice oculi compositi et pedicellati ut plurimum, v. sessiles aggregati aut simplices infiguntur, et antennae 4, sæpe ramosæ, raro 2 v. o, organa auditus et olfactus!; os (raro tubulosum), labro, mandibulis 2 palpiferis et maxillis 4, lingua bifida — et quandoque labio (inferiori) e pedibus transfiguratis — instructum — atque pedibus maxillaribus 6-10 auctum!: hinc pedes veri 14, 10 v. 6, e coxa, femore, tibia, metatarso et articulo terminali, quibusdam in pollicem et indicem

(chelas) efformato v. fimbriato et lamelloso — natatorio; intus musculi, nervi, vasa et viscera perfectiora conduntur, intestino recto solo abdomini commisso. Sexus distincti; pulli quidem imperfecti, metamorphosin veram insectorum haud subeunt, cutem vero pluries renovant; quædam parasitica.

ORDO I. PARASITA (piscium).

- Fam. 1. Pennellina: *Penella*, *Ancorella*.
- 2. Lernæadae: *Tracheliastes*, *Achtheres*.
- 3. Caligidae: *Ergasilus*, *Lamproglene*, *Anthosoma*, *Caligus*.
- 4. Argulidae: *Argulus*.

O. II. LOPHYROPODA.

- Fam. 1. Cyclopidae: *Cyclops*.
- 2. Cladocera: *Polyphemus*, *Daphnia*.
- 3. Ostracoda: *Cypris*.

O. III. PHYLLOPODA:

Limnadia, *Branchiopus*, *Apus*.

O. IV. PAECILOPODA.

Fam. Xiphosura: *Limulus*.

O. V. ISOPODA.

- Fam. 1. Epicaridae: *Bopyrus*.
- 2. Oniscidae: *Armadillo*, *Oniscus*, *Porcellio*, *Ligia*.
- 3. Cymothoadae: *Limnoria*, *Cymothoa*.
- 4. Sphæromidae: *Sphaeroma*, *Anthura*.
- 5. Asellina: *Asellus*.
- 6. Idotheidae: *Idothea*.

O. VI. LAEMODIPODA.

Fam. 1. Ovalia: *Cyamus*.

— 2. Filiformia: *Caprella*, *Leptomera*.

O. VII. AMPHIPODA:

Fam. 1. Ambulatoria: *Phronima*, *Ceropus*, *Corophium*.

— 2. Saltatoria: *Orchestis*, *Gammasus*.

O. VIII. STOMATOPODA.

Fam. 1. Bipeltata: *Phyllosoma*.

— 2. Unipeltata: *Alima*, *Erichtus*, *Squilla*.

O. IX. DECAPODA.

A. Macroura:

Fam. 1. Schizopoda: *Mysis*.

— 2. Caridae: *Palaemon*, *Nika*, *Pandalus*, *Crangon*.

— 3. Astacini: *Astacus*, *Thalassina*. *Porcellana*.

— 4. Locustini: *Palinurus*, *Scyllarus*.

— 5. Pagurini: *Pagurus*:

— 6. Hippidae: *Remipes*, *Hippa*, *Albunea*.

B. Brachyura:

— 7. Notopoda: *Ranina*, *Dorippe*, *Dromia*.

— 8. Cryptopoda: *Aethra*, *Calappa*.

— 9. Trigona: *Lithodes*, *Macropodia*, *Maia*, *Parthenope*.

— 10. Orbiculata: *Jxa*, *Leucosia*.

— 11. Quadrilatera: *Pinnotheres*, *Grapsus*, *Gecarcinus*, *Gelasimus*, *Ocypode*.

— 12. Arcuata: *Hepatus*, *Cancer*.

— 13. Natatores: *Carcinus*, *Podophthalmus*, *Portunus*, *Orithya*, *Matuta*.

SECTIO III. ANIMALIA VERTEBRATA S. CEPHALOZOA.

Skeleton internum, sensorium commune includens, musculis externe vestitum. Sanguis ruber frigidus v. calidus. Systema sanguiferum inter vasa lymphatica et capillaria. Omnibus pulmo v. branchiae, extremitates non ultra 4, sexus distincti.

CLASSIS IX. PISCES. Aquatici, infimi, ovi- — raro vivipari, respiratione branchiali — aquatica. Corpus varium, pinnis pectoralibus et ventralibus (extremitatibus), ni apodes sint, — et praeterea dorsalibus, caudali et anali praeditum. Skeleton ad sola corpora vertebralia reductum v. perfectius, cartilagineum v. osseum, multivertebratum; ossa cranii, ut in faetu humano, magis disjuncta. Cerebrum rudimentarium, cerebello et medulla praedominantibus; nervi dorsales et sympathici quibusdam evanescent, ophthalmici et vagi eminent; oculi absque palpebris; auri deficiunt concha externa et cochlea, ossiculum auditus unicum; nares postice clausae, lingua aspera et quibusdam dentata; tactus modo cirrhis adscribitur. Cordi deficit ventriculus et auricula sinistra; pulmo ad vesicam natatoriam reductus, ductu pneumatico hinc retro oesophagum sito. Cavitatem thoraco-gastricam implent: vesica natatoria, hepar magnum, lien, tubus cibarius, renes longi et testes v. ovaria maxima; pancreati ut plurimum surrogantur appendices pyloricae. Ovula jam emissa irrorantur spermate masculino; coitus et uterus pau-

cis (viviparis) proprius est. Quidam apparatu electrico vasto, nervoso-tendineo gaudent.

A. HELMINTHOIDEI Eichwaldi.

ORDO I. Cyclostomi:

Gastrobranchus, Ammocetes, Petromyzon.

B. CRUSTACEI.

O. II. Lophobranchii:

Syngnathus, Hippocampus, Pegasus.

O. III. Pectognathi:

Fam. 1. Sclerodermi: *Balistes, Ostracion.*

— 2. Gymnodontes: *Diodon, Tetrodon, Orthogoriscus.*

C. OSSEI s. OSTACANTHI.

O. IV. Acanthopterygii:

Fam. 1. Aulostomi: *Amphisilis, Centriscus; Fistularia, Aulostoma.*

— 2. Mugiloides: *Mugil.*

— 3. Chersobatae: *Ophiocephalus, Anabas.*

— 4. Squamipennes: *Toxotes, Holacanthus, Chelmon, Chaetodon.*

— 5. Scombrini: *Zeus, Vomer, Centronotus, Xyphias, Scomber.*

— 6. Scleroparei: *Gasterosteus, Scorpaena, Cottus, Dactyloptera, Peristedion, Trigla.*

— 7. Percacei: *Uranoscopus, Trachinus, Mullus; Serranus, Acerina, Lucioperca, Perca.*

— 8. Sciaenacei: *Sciaena.*

- 9. Sparini: *Sparus*, *Sargus*, *Chrysophris*, *Pagrus*, *Dentex*, *Boops*.
- 10. Labrini: *Scarus*, *Labrus*.
- 11. Carpopterygii: *Lophius*, *Batrachus*.
- 12. Gobiacei: *Callionymus*, *Gobius*, *Anarrhichas*, *Blennius*.
- 13. Tæniacei: *Cepola*, *Trichiurus*.

ORDO V. Malacopterygii: a) Apodes.

Fam. 1. Anguilliformes: *Ammodytes*, *Gymnotus*, *Gymnothorax*, *Muraena*.

b). Jugulares:

Fam. 2. Echeneidae: *Echeneis*.

- 3. Discoboli: *Cyclopterus*.
- 4. Pleuronectae: *Pleuronectes*.
- 5. Gadini: *Gadus*, *Lota*.

c). Abdominales:

- 6. Silurini: *Silurus*, *Malacopterus*, *Callichthys*, *Loricaria*.
- 7. Cyprinacei: *Anableps*, *Cobitis*, *Cyprinus*.
- 8. Esocini: *Belone*, *Esox*, *Exocoetus*.
- 9. Clupeacei: *Clupea*, *Engraulis*.
- 10. Salmonei: *Salmo*, *Osmerus*, *Corregonus*, *Thymallus*.

D. CARTILAGINEI S. CHONDRACANTHI.

ORDO VI. Sturionei (Eleutherobranchi).

- Fam. 1. Sturiones: *Acipenser* (*Sturio*, *Huso*, *Ruthenus*, *stellatus*).
- 2. Acanthorhini: *Chimaera*, *Callorhynchus*.

ORDO VII. *Selacha* (Plagiostomi).

Fam. 1. Squalini: *Scyllium*, *Squalus*, *Mustelus*,
Zygaena, *Pristis*, *Squatina*.

— 2. Rajae: *Rhinobatus*, *Raja*, *Trygon*, *Torpedo*, *Myliobatis*.

CLASSIS X. AMPHIBIA. *Aquatica* v. *terrestria*, ovipara. Corpus nudum, squamosum v. clypeatum, pedibus 4-2-0; pulmonibus cellulosus v. vesicæformibus respirans, pauci branchiis insimul v. statu pulli; sanguine frigido, rubro; vitae tenacis. Sceletum perfectius ac in piscibus, sed costae deficiunt Batrachiis et extremitates Serpenti- bus. Cerebrum parvum simplicius; organa sensuum perfectiora, sed palpebrae quibusdam deficiunt, auris absque concha, ossiculum auditus 1, reliquis rudimentariis, (Batrachiis 3.); cochlea apparet in plurimis, deficit vero Batrachiis; membrana tympani deest (?) Serpenti- bus et Salamandris; nares utrinque perviae; lingua car- nosa, sub- tus adcreta aut tendinea v. epiglottide auctâ surrogata; diaphragmatis rudimenta in Crocodilo; cor piscium in Batrachiis — vel ventriculo imperfecte septato ac auriculis binis; pancreas et lien deficiunt modo Serpenti- bus veris. Ureteres, oviductus, ductus spermatici et rectum hiant in cloaca; urocystis et penis sulcatus v. bifidus quibusdam.

ORDO I. *Batrachia*.

A. *Caudata* s. *Urodela*:

Fam. 1. Ichthyodea: *Proteus*, *Siren*, *Siredon* (*Axolotl*); *Amphiuma*, *Abranchus*.

- 2. Salamandrina: *Triton*, *Salamandra* (et *Proteocordylus diluvii*).

B. Ecaudata s. Anura.

- 3. Ranæ: *Bufo*; *Alytes* (*obstetricans*), *Bombinator*, *Pseudes* (*paradoxus*), *Rana*, *Hyla*; *Pipa*.

C. Anguinea: Fam 4: Caecilia.

ORDO II. Ophidii s. Serpentes.

A). Eurystomi: a) Venenosi:

Fam. 1. Crotalini: *Crotalus*, *Lachesis*, *Trigonocephalus*.

— 2. Viperini: *Vipera*.

— 3. Elapidae: *Elaps*, *Naja*, *Bungarus*.

— 4 Hydrini: *Hydrophis*, *Pelamys*.

b). Suspecti:

Dryophis, *Psammophis*, *Caelopeltis*, *Dipsas*, *Homalopsis*.

c). Atoxici (Innocui).

Fam. 1. Colubrini: *Tropidonotus* (*Natrix*), *Coronella*, *Coluber*, *Tyria*, *Trigonophis Eichwaldi*.

Fam. 2. Pythonoidei s. Peropodes: *Python*, *Boa*, *Eryx*.

B. Stenostomi:

Fam. 1. Jlysiæ: *Jlysia*, *Cylindrophis*.

— 2. Typhlini: *Rhinophis*, *Typhlops*.

ORDO III. Saurii.

A. Annulati:

Blanus, *Amphisbaena*, *Lepidosternon*, *Chirotes*.

B. **Squamati.** a) **Brevilingues:**

Fam. 1. **Chamaesauri:** *Chamaesaura*, *Cricochalcis*
Wieg.

- 2. **Gymnophthalmi:** *Pygopus*, *Ablepharus*.
- 3. **Ptychopleurae:** *Ophiosaurus* (et *Pseudopus*), *Gerrhosaurus*, *Zonurus*, *Saurophis*.
- 4. **Scincoidei:** *Anguis*, *Bipes*, *Zygnis* (*Seps*),
Gongylus, *Scincus*.

b). **Vermilingues:**

- 5. *Chamaeleo*.

c). **Crassilingues.**

- 6. **Ascalabotae:** s. **Geckones:** *Ptyodactylus*,
Ptychozoon, *Hemidactylus*, *Gymnodactylus*.
- 7. **Humivagae:** a) *Uromastix*, *Stellio*, *Trapelus*, *Phrynosoma*,
Scleroporos, *Tropidurus*, *Urocentron*.
- 8. **Dendrophilae:** a) *Polychrus*, *Anolis*,
Iguana, *Basiliscus*; b) *Lophura*, *Draco*,
Calotes.

d). **Fissilingues:**

- 9. **Lacertae:** *Lacerta*.
- 10. **Ameivae:** *Ameiva*, *Podinema* (*Teguixin*),
Thorictis.
- 11. **Monitores:** *Heloderma*, *Monitor*.

C. **Loricati:**

- 12. **Crocodilini:** *Alligator*, *Crocodilus*, *Gavialis*.

ORDO IV. **Chelonii:**

Fam. 1. **Chilotae:** *Trionyx*.

- 2. Chelydae: *Chelys*.
- 3. Emydae: *Cinosternon*, *Chelydra* (*serpentina*), *Emys* (*europaea*).
- 4. Chersinae: *Testudo* (*graeca*); *Cinyxis*, *Pyxis*.
- 5. Chelonae: *Chelonia* (*imbricata*, *esculenta*, *Cauana*), *Sphargis* (*coriacea*). (*).

CLASSIS XI. AVES. Amphibia (Lacertae) altius evoluta, squamis in plumas, pluries renovandas, mutatis, thorace praevalente, hinc calidissima (31-35° Reaum). ovipara, maxillis, intermaxillarib. et nasalibus in rostrum connatis, concha vix ulla, ossiculo auditus unico, lingua paucis carnosae; *oculo* excellunt. Cranium integrum, vertebrae colli numerosae (ad 25). Sternum magnum cristatum; scapulae ensiformi et claviculae furcula additur, digitis vero hebetatis, extremitates anticae in alas transfiguntur; posticae femore brevi, tibia, tarso simplici, longissimo, et digitis 2-3-4, liberis, lobatis v. palmatis constant.

Cerebro, corporibus striatis maximis donato, desunt anfractus; laryngi deficit epiglottis, sed additur larynx bronchialis inferior, vocifera (et canoris apparatus 10-muscularis); diaphragmatis vix rudimenta; pulmones accreti, inferius producti, communicant cum cellulis majoribus variarum corporis partium ac ossibus pneumaticis;

(*) Clar. Eschscholtz Amphibiis et Avibus (non male forsan) interponit *Monotrymata*: *Pamphractum*, *Tachyglossum* et *Ornithorynchum*. Vid. Ej. Ideen zur Aneinanderreihung der rückgrathigen Thiere. 1819.

cor perfectum; oesophago ingluvies, ventriculo crasso atrium adduntur; rectum, uretheres et ductus genitalium hiant in cloaca communi; ovarium 1. sinistrum, racemosum; testiculi et renes in regione lumbali, penis nonnullis proprius; coitus per juxtapositionem cloacarum expeditur.

ORDO I. NATATOIRES. Primi cum Cheloniis quamdam similitudinem alunt.

- Fam. 1. Impennes: *Aptenodytes*, *Spheniscus*.
 — 2. Pygopodes s. Alcae: *Alca*, *Mormon*; *Cephus*, *Uria*, *Colymbus*, *Podiceps*.
 — 3. Steganopodi: *Plotus*, *Phaëton*, *Sula*, *Haliaeus*, *Pelecanus*.
 — 4. Lamelloso-dentati s. Anatidae: *Mergus*, *Anas*, *Anser*, *Cygnus*.
 — 5. Tubinares s. Procellariae: *Diomedea*, *Procellaria*, *Puffinus*.
 — 6. Longipennes s. Laridae: *Lestris*, *Larus*, *Sterna*, *Rhynchops*.

ORDO II. GRALLATOIRES.

- Fam. 1. Hygrobatæ: *Phaenicopterus*, *Platalea*, *Recurvirosta*.
 — 2. Macroductyli s. Rallidæ: *Fulica*, *Porphyrio*, *Gallinula*, *Rallus*, *Crex*, *Parra*.
 — 3. Scolopacidæ: *Machetes*, *Tringa*, *Calidris*, *Phalaropus*?, *Totanus*, *Limosa*, *Scolopax*, *Numenius*, *Ibis*, *Tantalus*.
 — 4. Herodii: *Cancroma*, *Scopus*, *Anastomus*, *Eurypyga*, *Dromas*, *Mycteria*, *Ciconia*, *Ardea*; *Grus*.

- 5. Alektoridæ: *Psophia*, *Palamedea*, *Dicholophus*, *Vaginalis*, *Glareola*?
- 6. Charadriadae: *Cursorius*, *Himantopus*, *Haematopus*, *Vanellus*, *Squatarola*, *Strepsilas*, *Oedicnemus*, *Charadrius*.

ORDO III. Tractatores mihi.

- Fam. 1. Trochilidæ: *Orthorhynchus*, *Trochilus*.
- 2. Certhiadæ: *Certhia*, *Tichodroma*, *Dendrocolaptes*.
- 3. Cinnyridæ: *Nectarinia*, *Dicaeum*, *Cinnyris*, *Arachnothera*.
- 4. Epopidae: *Epimachus*, *Promerops*, *Upupa*, *Fregilus*.
- 5. Galbulidæ: *Jacamerops*, *Galbula*.
- 6. Sittidæ?: *Sitta*, *Xenops*, *Anabates*, *Synallaxis*.
- 7. Alcyonidæ: *Merops*; — *Alcedo*, *Ceix*.
- 8. Picidae: *Picus*, *Picoides*, *Yunx*.

ORDO IV. Gibborostres mihi.

- Fam. 1. Cuculidae: *Cuculus*, *Indicator*, *Scythrops*, *Pogonias*, *Bucco*, *Tamatia*, *Crotophaga*.
- 2? Amphiboli: *Corythaix*; *Musophaga*.
- 3. Psittacini: *Psittacus*.
- 4. Rhamphastidæ s. Serrati: *Trogon*, *Pteroglossus*, *Rhamphastos*.
- 5. Buceridæ: *Prionites*, *Buceros*.

ORDO V. AMBULATORES?

- Fam. 1. Coraces: *Corvus*, *Nucifraga*, *Pyrrhocrax*, *Coracias*, *Paradisca*, *Eulabes*.

- 2. Sturnidæ: *Oriolus*, *Gracula* (*rosea*), *Buphaga*, *Glaucopis*, *Sturnus*, *Icterus*, *Cassicus*, *Xanthornus*.
- 3. Sylviadæ: *Motacilla*, *Saxicola*, *Sylvia*, *Regulus*, *Troglodytes*, *Accentor*, *Anthus*.
- 4. Passerini: *Alauda*, *Emberiza*, *Fringilla*, *Pyrrhula*, *Loxia*, *Colius*, *Tanagra*; *Parus*.
- 5. Pipridæ: *Pipra*, *Rupicola*.; *Todus*, *Eurylaimus*.
- 6. Merulidæ: *Turdus*, *Myiothera*, *Cinclus*, *Philedon*.
- 7. Laniadæ: *Lanius*, *Ocypterus*, *Thamnophilus*, *Edolius*, *Cephalopterus*, *Gymnocephalus*?
- 8? Muscicapidæ: *Tyrannus*, *Muscicapa*.
- 9? Ampelidæ: *Bombycilla*, *Ampelis*, *Chasmarrhynchus*, *Procnias*, *Coracina*?
- 10. Hiantes: *Hirundo*, *Cypselus*, *Caprimulgus*.

ORDO VI. Raptatores.

- Fam. 1. Strigidæ: *Noctua*, *Strix*, *Bubo*, *Syrnium*, *Surnia*.
- 2. Accipitrini: *Circus*, *Buteo*, *Milvus*, *Peris*, *Nisus*, *Astur*; *Cymindis*, *Harpia*, *Haliaëtos*, *Aquila*; *Falco*.
 - 3. Amphoteri:? *Gypogeranos*, *Gypaëtos*.
 - 4. Vulturini: *Vultur*, *Cathartes*, *Sarcorampus*.

ORDO VII. Rasores.

- Fam. 1. Columbini: *Columba* (et *Columbigallinae*).

- 2. Penelopidæ: *Opisthocomus*; *Crax*, *Penelope*.
- 3. Megapodii: *Menura*, *Megapodius*.
- 4. Tetraonidæ: *Tetrao*; *Pterocles*, *Lagopus*, *Perdix*, *Coturnix*.
- 5. Crypturi: *Crypturus*, *Ortygis*, *Syrrhaptes*?
- 6. Phasianidæ: *Meleagris*, *Argus*, *Pavo*, *Phasianus*, *Gallus*, *Numida*.
- 7. Jnepti: *Didus*.

ORDO VIII. Cursores.

- Fam. 1. Volantes: *Otis*. — (Europæ et Afric. bor.)
- 2. Struthiones: *Rhea* (Americ.); *Dromias* (Nov. Holland.); *Casuarus* (Asiæ), *Struthio* (Africæ).

CLASSIS XII. MAMMALIA. Homini anatomice proxima; dentibus variis (carnivororum, herbivororum v. rodentium) aut nullis; pedes et digitus quibusdam hebetati; mamma- rum locus et numerus varius, raro defectus?; vertebræ colli 7, excepto Bradypode, 9 collaribus instructo; corpus ut plurimum pilosum; diaphragma omnibus; cloaca paucis.

ORDO I. Cetacea a) carnivora: *Balaena*, *Physeter*; *Monodon*, *Delphinus*.

b) herbivora s. Sirenia: *Manatus*, *Rhytina*, *Halicornus*.

O. II. Pinnipedia: *Trichechus*; *Otaria*, *Phoca*.

O. III. Solidungula: *Equus*.

O. IV. Bisulca:

Fam. 1. Tylopoda: *Camelus*, *Auchenia*.

— 2. Devexa: *Camelopardalis*.

— 3. Capreoli: *Moschus*, *Cervus*.

— 4. Cavicornia: *Antilope*, *Capra*, *Ovis*, *Bos*.

O. V. Multungula: *Elephas*, (Mastodon); — *Hippopotamus*; — *Rhinoceros*, *Tapirus*, (*Lophiodon*, *Palaotherium*, *Anoplotherium*); *Sus*; — *Hirax*.

O. VI. Glirina s. Rosores.

Fam. 1. Subungulata: *Hydrochaerus*, *Cavia*, *Dasyprocta*.

— 2. Aculeata: *Loncheres*, *Chrysurus*, *Hystrix*.

— 3. Georychi: *Ascomys*, *Bathyergus*, *Aspalax*, *Sacomys*, *Georychus*, *Spalax*.

— 4. Murina: *Lemmus*, *Hypudaeus*; *Dipus*, *Mus*, *Cricetus*.

— 5. Sciurina: *Arctomys*, *Spermophilus*, *Pteromys*, *Sciurus*, *Myoxus*, *Chiromys*.

— 6. Lagostomi: *Pedetes*, *Eriomys*, *Lagostomus*.

— 7. Leporini: *Lepus*, *Lagomys*.

— 8. Palmipedia: *Hydromys*, *Castor*, *Fiber*.

O. VII. Incompleta.

Fam. 1. Monotremata: *Ornithorhynchus*, *Tachyglossus*.

— 2. Vermilingua: *Manis*, *Myrmecophaga*, *Orycteropus*.

— 3. Cingulata: *Dasyus*, *Chlamydophorus*.

— 4. Bradypoda: *Cholaepus*, *Bradypus*.

O. VIII. Soricina s. Insectivora.

Erinaccus, Cladobates, Sorex, Myogale, Chrysochloris; Talpa, Condylura, Centetes.

O. IX. Fera. A. Digitigrada:

Fam. 1. Canina: *Canis (Lupus; Vulpes).*

— 2. Felina: *Hyaena, Felis (Leo, Tigris, Catus, Lynx).*

— 3. Viverrina: *Rhyzaena, Viverra, Herpestes.*

— 4. Mustelina: *Mephitis, Mustela, Lutra, Enhydris.*

B. Plantigrada:

— 5. Ursina: *Gulo, Meles, Ursus, Procyon, Nasua.*

O. X. Pedimana s. Marsupialia.

Fam. 1. Carnivora: *Didelphis, Chironectes; Dasypurus.*

— 2. Frugivora: *Halmaturus, Hypsiprinnus; Phascolarctos, Phalangista, Petaurus.*

— 3. Glirina: *Phascolomys.*

O. XI. Chiroptera:

Fam. 1. Vespertiliones: *Nycteris, Vespertilio, Rhinolophus, Phyllostoma, Pteropus.*

— 2. Dermoptera: *Galeopithecus.*

O. XII. Quadrumana:

Fam. 1. Prosimii: *Lemur, Lichanotus, Stenops, Otolicnus, Tarsius.*

— 2. Hapalini: *Hapale.*

— 3. Simiæ novi continentis: *Pithecia, Nyctipithecus, Callithrix, Cebus, Ateles, Mycetes.*

Fam. 4. Simiæ veteris continentis: *Cercopithecus*,
Cynocephalus, *Hylobates*, *Simia*.

IV.

H O M O S A P I E N S.

Homo singulorum animalium partes graviores certo æquilibrio sibi vindicat; manibus et pedibus binis, perfectissimis; dentibus æqualibus, approximatis, unguibus planis; cute vix pilosa, situ erecto, parte cerebraali, faciei, cerebello et medullæ prædominante, ingenio et loquela distinctus.

Gens humana lejo—v. ulotricha, in 5 tribus s. stirpes generales discedit:

1. **Stirps Aethiopica** (Africana): Aethiopes, Caffræ, Hottentotæ et Melanini.

2. **Stirps Malaica** (Australasiatica): Papuenses, Alfurii, Tasmanii, Endameni.

3. **Stirps Mongolica** (Asiatica): Mongolæ, Calmuccæ, Kirgisi, Tibetani, Chinenses ac Hyperborei: Buriæti, Camtschadales, Ostiaci, Coraeci, Tungusi, Tchuktschi, Samojedæ, Lappones — Aleuti, Esquimotæ.

4. **Stirps Americana**: Columbici, Paragaienses, Brasiliani, Patagoni.

5. **Stirps Caucasica** (Europæa): Caucasi, Tcherkessi, Tataři, Hungari, Armenii, Persæ, Turcæ, Arabes, Aegyptii; — Græci, Romani, Hispani, Galli; — Gothi ac Germani cum Anglis et Suecis; — Slavones: Rossi, Poloni, Bohemi, Venedi, Valachi, Esthones et Fenni, *in Stirpem Asiaticam degenerantes*.

Un dernier trait de la grandeur de l'Homme, et de sa suprême élévation sur les Animaux, est le commerce qu'il a avec son Créateur, par la Religion.

Enveloppés des plus épaisses ténèbres, les Animaux ignorent la Main qui les a formés. Ils jouissent de l'existence, et ne sauroient remonter à l'Auteur de la vie. L'Homme seul s'élève à ce Divin Principe; et prosterné aux pieds du Trône de Dieu, il adore dans les sentimens de la vénération la plus profonde et de la plus vive gratitude, la Bonté Ineffable qui l'a créé.

.... Les différentes loix qu'il a reçues de la Sagesse Suprême, sont les grands flambeaux placés de distance en distance sur le chemin qui le conduit du tems à l'éternité.

Eclairé par cette Lumière Céleste, l'Homme avance dans la carrière de gloire qui lui est ouverte, et déjà il saisit la couronne de vie et en ceint son front immortel.

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| 2 — 8 | lichonum | lichenum |
| — — 20 | arbonate | <i>Carboneum</i> |
| 3 — 8 | presente | praesente |
| 8 — 25 | ? | Deleatur. |
| 15 — 1 | hac | has |
| 18 — 4 | Verteres | Veteres |
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EXPLICATIO SCHEMATIS.

Generalia ac polaria Planetae nostri principia sunt: *Oxygenium*, absolute negativum (acidificum) et *Hydrium* seu *Hydrogenium*, absolute positivum (alcalificum); peculiari connubio horum duorum elementorum prodeunt: *Carboneum* (solidum primum) et Azotum seu *Nitrium* (aëreum), nec non Aqua, summe indifferens et Mater materialis omnium.

Quatuor illa cardinalia Elementa (*Oxygenium*, *Hydrium*, *Carboneum* et *Nitrium*) varia ratione conferunt ad omnia producenda. Elementis adnumerari solent corpora (ametallica, metalloidea et metallica), chemicā arte haud decomponenda, quorum polaritatem seu affinitatem majorem vel minorem — distantia majori minorive Schema nostrum indicare conatur; hinc intelligitur, cur *Hydrium* praevalens cum *Nitrio alcali* (ammoniam, cui plus quam 0,17 hydrii insunt) gignit, illud vero cum praevalente *Chloro acidum* (muriaticum, minus quam 0,03 hydrii praegnans) edit; *Silicium* eā ratione oxidatur, ut *Silicia*, ultra 0,48 *Silicii* tenens, effingatur fere neutralis, adinstar Aquae; *Platinum* cum *Oxygenio* (vicino) aegre unitur, *Metalloida* vero (remota) *Oxygenii* avidissima sunt — etc.

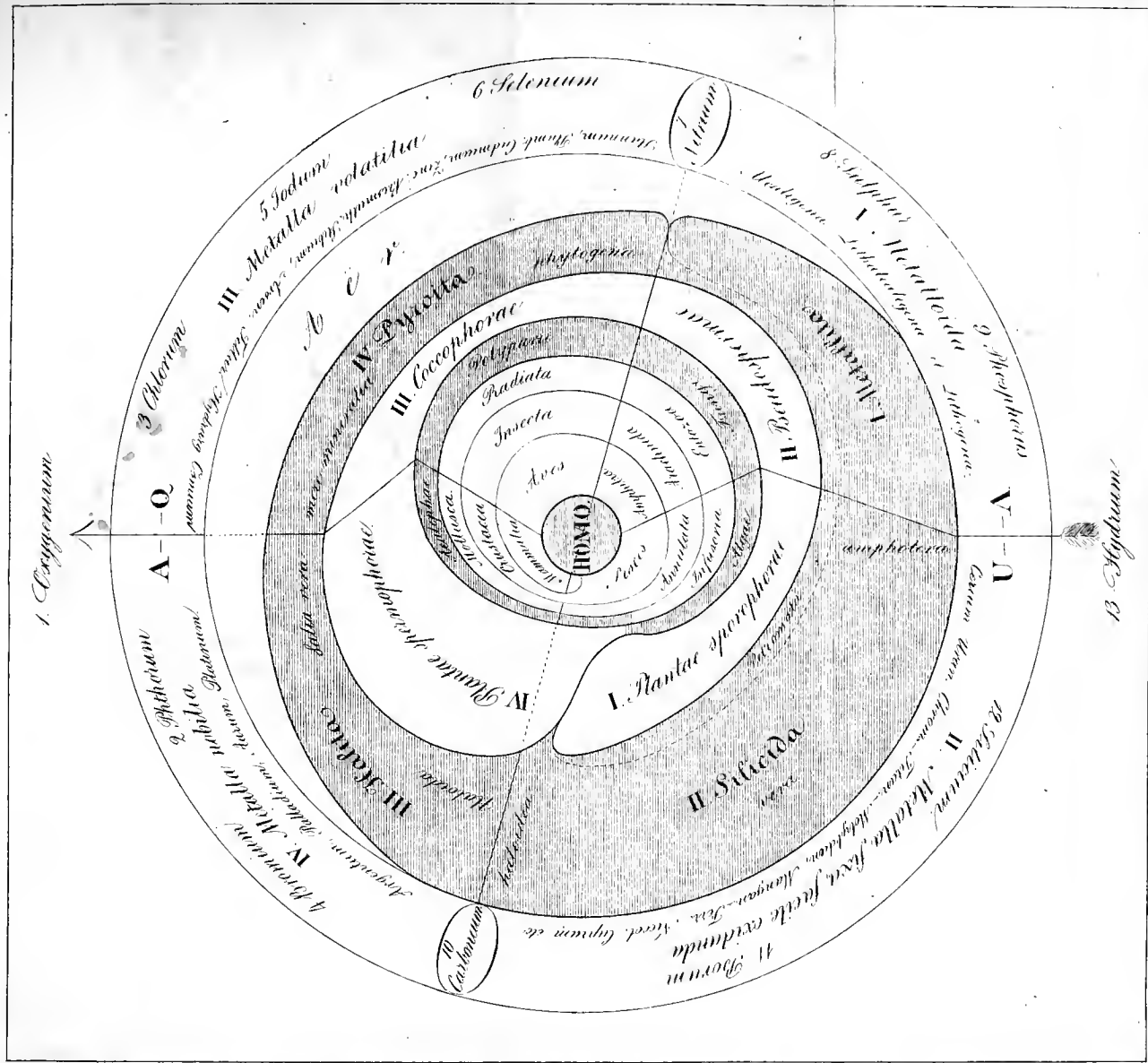
Ex *Oxygenio* et *Nitrio* (*Hydrio* oxidato) certa ratione *Aër* conflatur. *Oxygenii* — aliorumque negativorum Elementorum — connubio cum omnibus (positivis praecipue) Regnum anorganicum seu *moleculare* (*Metallita*, *Si-*

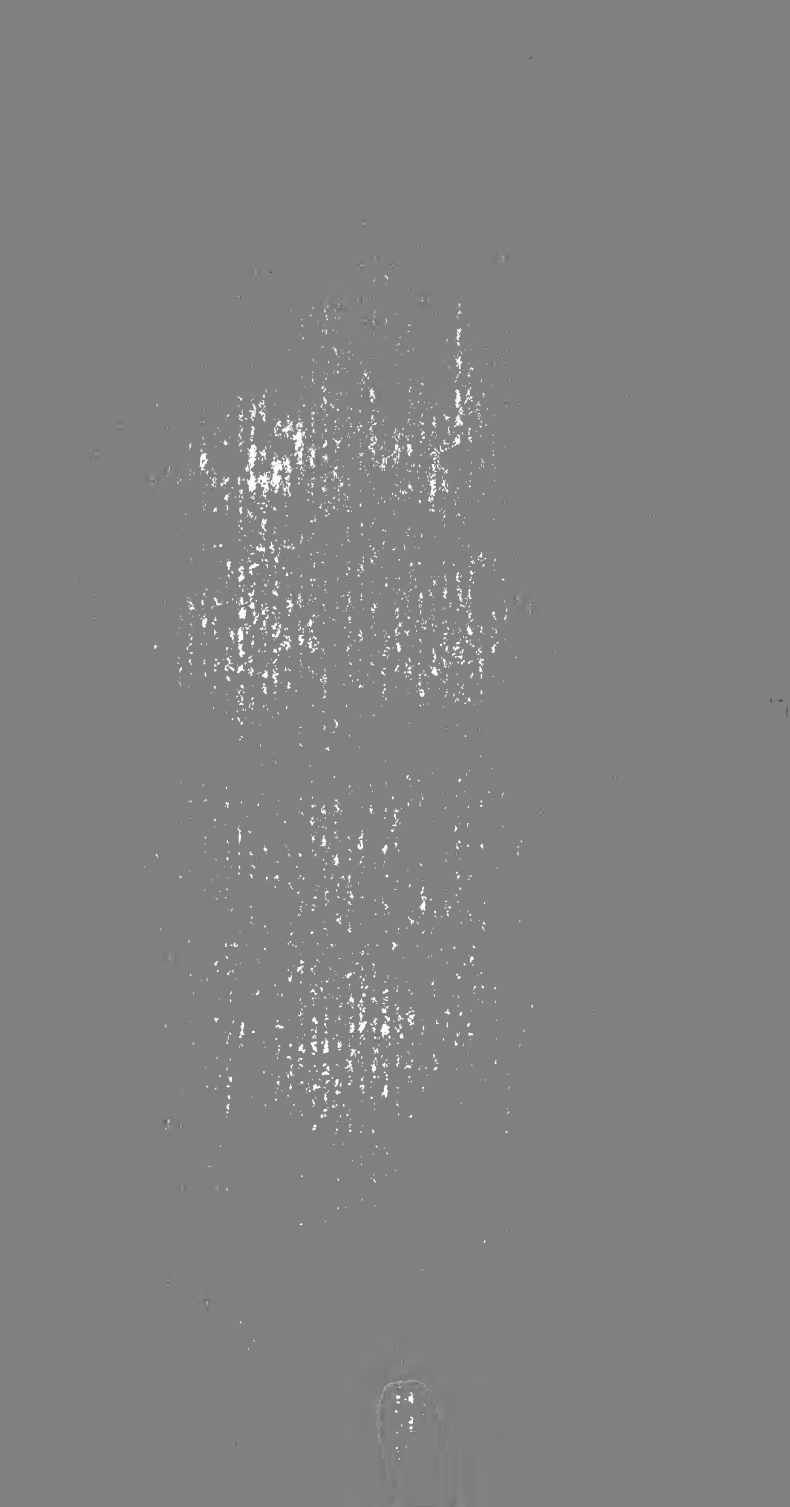
licida, Halita et Pyroita) prodit; e quatuor vero Elementis cardinalibus, subjunctis particulis reliquorum, Regnum organicum seu *cellulare* coalescit, ita quidem, ut in Plantis (et Phytozois) *Carboneum* emineat, Animalia vero ac Homo, omnia opera Creatoris coronans, *Nitrio* praevalente gaudeant.

Omnia Elementa, quae Chemia statuit, (exclusis primordialibus — Oxygenio et Hydrio), Circulo *Aquae* inscripta sunt, quandoquidem illa e hoc fluido primordiali Naturae autocratiâ genita esse contendimus; nexus vero naturalis omnium Corporum tractu continuo, spirali-irregulari, a Metallitis ad Hominem effiguratus est, directione inversâ Organicis datâ, et Petromatib; interpositis, Plantis versus *Carboneum* et Animalibus versus *Nitrium* tendentibus.

Quisque orbis Corporum peculiarium in 4 sectiones varii voluminis discedit, pluriesque eodem numero subdividendus.









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